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AMERICAN FORESTS

VOLUME 51 JUNE, 1945 NUMBER 6

Editor-in-Chief
OVID BUTLER

Editor
ERLE KAUFFMAN

Associate Editor
LILIAN CROMELIN

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THE COVER

"Buy A Bond in the Mighty Seventh!"

Photograph by John L. Blackford

American Forests

Published monthly by

THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street
Washington 6, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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MY FAVORITE TREE

GLENN L. MARTIN

Aircraft Manufacturer—Conservationist

IN THE aircraft industry we are often called upon to do the impossible; such requests have grown commonplace. To isolate a single favorite tree from a forest full of favorite trees, however, calls for something higher than mathematics,—particularly in this instance when my favorite tree, the American holly, is seldom found growing in isolation. Never to my knowledge, either, does the holly grow in a pure stand. Always it seeks the companionship of larger trees and, when winter disrobes the forest, provides the only touch of greenery that transfixes an otherwise dreary forest floor.

Influencing my choice of the holly are not only fond boyhood recollections associated with the hanging of wreaths at Christmas time, but also the knowledge that in the holly, native upland game and song birds find a very substantial item of food. Wildlife biologists have found holly berries to constitute a staple part of the diet of nearly all species of fruit- and seed-eating wildlife. Fruiting as it does when other foods are scarce or covered with a mantle of encrusting snow, the holly is a critical food for wildlife populations.

Aside from the purely utilitarian value of the American holly, it was a lavish Nature that developed the tree, for there are few that surpass it in pristine beauty in its native haunts. Placed in a springtime Maryland locale, shaded by over-towering hardwoods, framed in a blaze of white dogwood and sheltering the nest of a scarlet cardinal, the holly is scarcely with peer.

THE FOREST EXCHANGE . . .

A Fly Purist Speaks

SIR: Harry Botsford's "Bargain Day Along the Creek" in the April issue is a worthy bit—all except that crack about fly purists. He relishes relating the most ancient of tall tales about a fly fisherman working in a heavy snow storm and taking trout of great size and notable fighting ability with every cast.

This bit of sarcasm is the figment of a disgruntled tyro. Not once but on a number of occasions, I have done this very thing. To compound the situation I have even taken my limit of fighting browns of good size in freezing weather and blinding blizzard with snow on the ground—and have the photographs to prove it. These pictures were made by an angler friend who was not fishing due to ideas similar to those of Mr. Botsford.

Like women, the brown trout is no respector of tradition. He hits hard at times when no self respecting trout would rise to anything. His foibles are legion. Consistency he has not. In a violent thunderstorm I have seen the water boil with rising browns that have not fed for a week. If fish bit according to the book, there would be no fun in fishing. We rest our case, Mr. Editor.—*Captain Donald N. Carpenter*, Washington, D. C.

DDT and the Forest

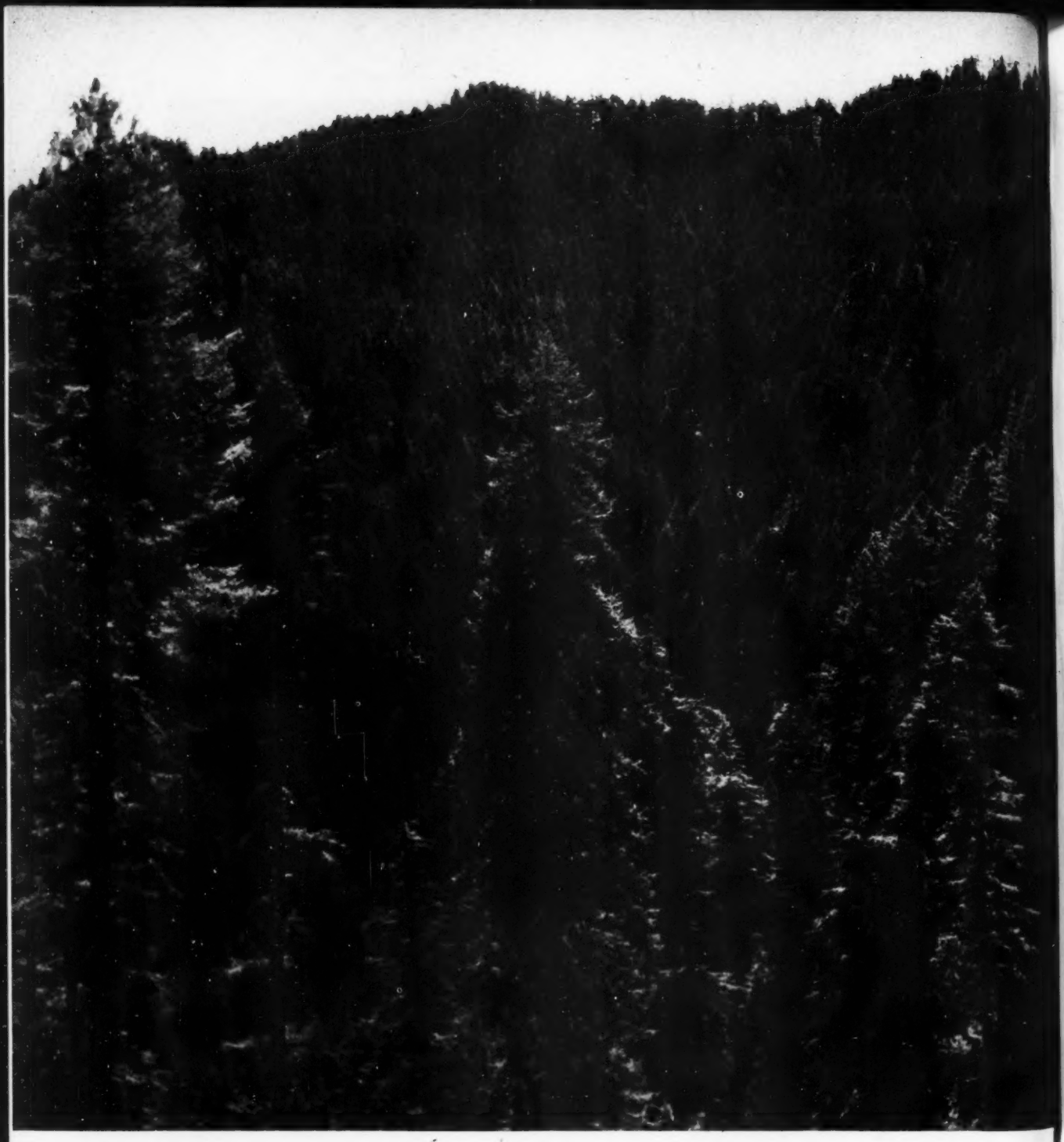
SIR: "Fighting Tree Killers With DDT," by Henry S. Kernan, in the March issue, suggests irresponsible chemistry and aeronautics run wild. DDT, "an insecticide that destroys practically every insect in an acre of forest," is evidently a substance which, if it must be used at all, should certainly be broadcast only on limited areas and under rigid restrictions.

"Forests may be faced with something that has never occurred before in history—a practically insect-free forest," the author admits. How can the full effect of such a disruption of the balance of nature be measured within even a year or two, to say nothing of being predicted beforehand?

To the extent that an application of so non-selective a substance as DDT is successful in destroying all insects in a forest, we should expect the disappearance of all insectivorous birds and reduced numbers of certain other birds, and of amphibians, certain fishes, and insectivorous mammals. Some insect-pollinated plants with a short life-cycle might be eliminated and others, with a longer cycle, including species of trees, might be reduced in number.

In what sequence would insects and their parasites and predators return to

(*Turn to page* 306)



"More and more timber-owning companies are adopting forest management plans designed to keep their lands producing timber for future operations . . . . upwards of a thousand foresters are now employed in the industries in striking contrast to the mere handful so employed twenty years ago."

EDITORIAL

FOREST INDUSTRY SEES THE TREES

ONE OF the encouraging trends in this country today is the increasing extent to which American industry is giving thought and action to the question of future supplies of raw wood. This is true not only of those forest industries which own or buy timber for conversion into raw or semi-raw products but to the great variety of industries whose operations call for extracted wood in one form or another.

It has not been many years since the thought of forest industries centered primarily upon cutting down trees, getting out the wood and finding more trees elsewhere to cut. Little or no thought was given to the question of growing trees as a business investment or to perpetuate sources of supply.

This thinking is now going through an evolutionary stage and translating itself into tree growing action. More and more timber owning companies are adopting forest management plans designed to keep their lands producing timber for future operations. They are employing foresters in increasing numbers to handle this phase of their business. Upwards of a thousand foresters are now employed in the industries and the demand exceeds the supply. This is in striking contrast to the mere handful so employed twenty or even ten years ago.

Regional and national associations of lumbermen are developing standards of woodland management and are urging their members to adopt them as first steps in keeping their lands growing trees. This segment of the industry has coined the term "tree farms" to apply to all lands which owners bring under the standards of practice prescribed. Progress in this direction is indicated by a recent report from the conservation department of the National Lumber Manufacturers Association to the effect that in the Douglasfir area of the Pacific Northwest over 2,000,000 acres have been accredited as tree farms by the West Coast Lumbermen's Association. In the western pine territory just under 2,000,000 acres meet the management specifications as drawn by the Western Pine Association. In the South the Southern Pine Association claims almost 6,000,000 acres now in tree farms.

An event that adds significance to this tree growing movement by industry is the organization recently of a Forest Industries Council which brings together the National Lumber Manufacturers Association, the American Pulp and Paper Association and the American Pulpwood Association into united leadership "for the betterment of American forests and the attainment of continuous forest production." The potential influence of these three groups in bringing about better woodland management by industry may be gained from the fact that they represent over two-thirds of the production of forest products in the United States.

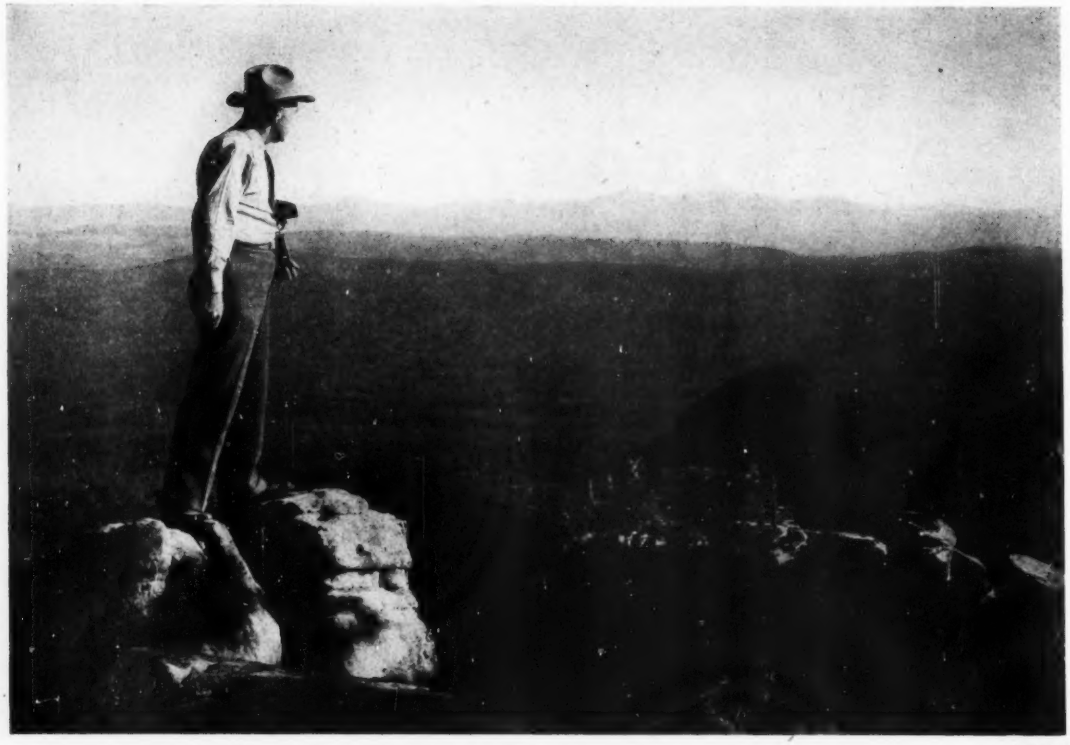
In carrying out its purpose the council, according to its announcement, will seek to extend and improve forest management on all privately owned lands. to provide better protection for forest owners against fire and tree destroying insects and diseases, to strengthen state forestry departments and organizations, to extend private ownership to lands which lend themselves to profitable timber growing and to support public acquisition of those lands which cannot be privately operated at a profit.

A further and notable purpose of the council is to promote public regulation of cutting practices through appropriate state laws drawn to meet varying local conditions of timber growth and management. In short, the council represents a joint effort on the part of the three largest forest industries of the country to perpetuate and increase the productivity of forest land privately owned throughout the United States.

These are a few highlights in the picture of industrial forestry today. How are they to be appraised? Some are disposed to dismiss them as forestry fronts put on by industry to curry public good-will and to stave off public regulation. Others are inclined to belittle them on the grounds that minimum standards of wood practice set up by the industry groups are insufficient. A broad appraisal taking into account the breadth and diversity of the overall trend toward industrial forestry does not, we think, bear out these negative and pessimistic views.

In the first place, the movement is not of mushroom growth. It has been going on and gaining momentum for more than ten years. War handicaps have disrupted it somewhat but they have not stopped its spread. In the second place, land investments, current operating expenditures and progress already made by many companies and individuals, some of whom are now practicing as good forestry as is to be found in this country, can stem only from a gradual awakening on the part of forest industry that its future depends upon beginning now to grow future crops of trees. Future historians, we suggest, may record the present era as one in which American forest industry was learning to walk on its own forest grown legs.

If this long-range view is correct, the movement may easily be the most significant event in the history of forest economy in this country. Its rate of progress and eventual success will depend upon the American people, including state and federal governments, accepting industry's efforts at actual valu and giving them the same measure of cooperation they have given public forestry. Certainly, the public interest in having the industry succeed outweighs all other interests.



Don James claimed—and got—most of the valuable timberland in the Southwest, including large portions of the present Tonto, Crook and Apache National Forests

JIM REAVIS, swinging his ax in a Missouri woodland, paused one day in the 1870's to spit on his hands and say to a teamster, "You know one thing? I aim to get away from all this hard work."

"What you gonna do?" the teamster jibed. "Steal a log and float down the Mississippi on it?"

"If a steal one log I'll steal a whole forest full."

"Do tell!"

"I'm headin' for the Southwest. I'd like to git me a pretty Mexican Señorita, and live in a big hacienda with servants and all that. I'd like to wear a red suit and ride a big white horse, and make people set up and take notice when I passed by."

"Whoops!" His companion drove off, still laughing, and Jim went back to work.

But day dreams are the beginnings of grandeur, and what Jim Reavis did about his dreams makes a story that is utterly incredible—except that it comes directly from records of the United States Court.

One day Jim disappeared from his humble job in Missouri, leaving several unpaid debts. Nobody knew what became of him, and in truth nobody much cared; in a very short time he was forgotten.

But about five years later a stately gentleman in a red velvet Spanish costume appeared in Arizona with a beautiful wife and a retinue of servants, and the following manifesto was published there:

AVISO!

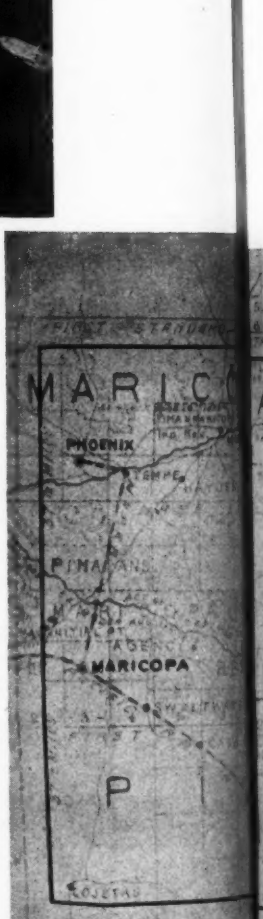
Harken ye, all men. That person or persons now situate on *La Baronia de Arizonac,* known also as the Peralta Grant, will be subject to immediate removal unless proper arrangements be made and set forth as a matter of record.

By order of The Baron,
Don James Addison
de Peralta-Reavis.

The stately gentleman was Don James himself. He and his wife dressed in the richest finery of old Spain. They rode around the territorial towns in a shiny coach drawn by six milk-white horses. They announced that they had come to claim an ancestral barony, a great estate left to the baroness by her grandfather, who traced his ownership directly to King Ferdinand of Spain. And how large was their barony, and where was it located? That's where the excitement began.

The Barony of Arizona, as shown on an "official" map, was no mere rancho or suburban estate. It was all of 12,000,000 acres. It was a rectangle extending from a line just west of Phoenix, Arizona Territory, clear over to Silver City, New Mexico.

It embraced much of the most valuable timberland in the southwest. The great Coronado Trail region, through the present Crook and Apache National Forests, was wholly included,



The "Barony of Arizona," as shown on the "official" map, was a rectangle extending from a line west of Phoenix, Arizona, east to Silver City, New Mexico

STOLE 12,000,000 ACRES

The Amazing Adventure of "The Baron of Arizona"

By OREN ARNOLD

The "baroness"—Dona Sofia Loreto

as well as most of the beautiful Tonto National Forest, with its famed Mogollon Rim stand of pine. Frontier citizens at that moment in history were just beginning to open cities and railroads, so that the timber stand was very valuable.

The barony included every city, town and village in Arizona of any importance, except Tucson. It included most of the rich mines from which people were already taking fortunes in gold, copper and silver. It included the best of the irrigable desert lands, some thousands of acres of which were already productive with water from the Gila and Salt Rivers. It included much of the best land for cattle grazing.

Of course, frontiersmen being what they were, and being Americans all the way, roared in indignation.

"What does this poppycock mean?" one spokesman demanded of the sheriff, in behalf of an armed committee one morning. "Trying to kick us off our land!"

"Gentlemen, I'm sorry to say it ain't poppycock," the sheriff answered. "I wish it was. You all better come with me to the United States marshal."

No less a government man than the marshal, abetted by the judge and land commissioner, had to back up the sheriff.

"All that Don James Addison de Peralta-Reavis claims is true," they announced. "Federal investigators have dug into his inheritance. It is documented at every turn. The records are on file in the old monasteries of Mexico and Spain, showing that his wife did truly inherit this 12,000,000 acres. And under the Treaty of Guadalupe Hidalgo,

This portrait of the "first baron" helped establish Reavis' claim

the United States has to recognize such land grants."

"Then that means we are all squatters!" the citizens howled.

"That's just what it amounts to. He can kick you off. But he's giving you the chance to stay—if you pay his fees."

Pay his fees! The great baron was fair. If you were a poor man who swung an ax cutting crossties or hauling logs to mill, his agents would charge you only $500 or so to keep your little home cabin. But if you owned the sawmill itself, you might have to pay $5,000.

Suppose, then, you were still bigger in business, and owned the railroad for which ties were cut on the barony, and which had right-of-way there. In that case your fee was $50,000—and Don James collected that amount from the Southern Pacific Railroad.

He collected a similar amount from the silver mines at Globe; he collected all the traffic would stand everywhere—and did it with such grace and skill that surprisingly little objection was raised. Of course there was hardship, howling. Pioneers had very little cash. Many had to give up and move away, but the Don brought in new settlers with money to pay him. Many more had to sell cattle or mine stock to pay. But the money began to roll in.

The big corporations such as the railroad and mines naturally fought back. They hired the most distinguished lawyers in the country to fight the baron. Among them were men whose names still impress Americans—Roscoe Conkling, Collis P. Huntington, Charles Crocker, Robert G. Ingersoll. These four, notably, investigated the baron's astounding claim, went again through the old monastery documents—it was a custom in the old days for Spain and Mexico to file official papers in Monasteries and tried to find a loophole with the aid of federal government investigators. There was no loophole. Those lawyers ended by taking Don James and his charming wife, Doña Sofia Loreto, into their homes socially, actually entertaining them and, in behalf of their clients, courting good will.

For a while, then, the baron and baroness soared high. Twin sons were born.

Tom Weedin, the quiet-mannered printer, who broke the "baron's" case

This created a mild sensation in the Southwest. Soon the little boys were shown off to the public, dressed in gorgeous Spanish raiment as were mother and father. But, all told, the family really did not stay in Arizona long at a time. They would come in, inspect the property, check up on the collection agents, let a few contracts for this and that, then disappear again. But they were much in evidence elsewhere in the world.

At St. Louis, Missouri, Don James purchased an expensive mansion. He and his family lived there as much as three months a year, for St. Louis was an up-and-coming city with gay social life.

Because of his importance to the government—and its importance to him—he also purchased a fine home in Washington, D. C. Later he acquired a still more expensive estate in suburban Mexico City where he spent summer months in elegant idleness. When he and the doña tired of that, they went to Madrid, Spain, and bought still a fourth magnificent home.

Fame of the great baron *de Arizonac* had spread across the ocean. He and the baroness were cordially welcomed in Madrid society. No less a personage than the American Ambassador gave a state ball for them, and royalty was there. Records say that Don James "was easily the most distinguished looking gentleman present, tall, exquisitely dressed, perfect in grace and bearing and manner of speech."

All told, records reveal that he spent more than $60,000 a year on travel alone. This was substantiated later by his own statement. He would come to the United States and shuttle between Arizona, California and Washington for months at a time, then go abroad again. Everywhere he went he made an impression. In the frontier towns of his barony he liked to attend festivals, especially the Mexican *fiestas*, and—yes, exactly as woodcutter Jim Reavis in Missouri had dreamed—dance with all the lovely señoritas. At one such village fiesta in Mexico a pretty little solo dancer entertaining him in the plaza fainted from the heat.

"Water! Water! Bring her water to drink!" the baron ordered, bending over her.

No water was available, until somebody had run quite a long way. The baron was furious. He revived the girl in due time—then gave $5,000 for piping water to a plaza drinking fountain.

At a church in Mexico he gave $1,500 for an altar cloth. He might leave $100 or $500 in any collection plate. In short, he spent money lavishly on everything.

Meanwhile, inevitably, the citizens on his barony in Arizona, being die-hards, were still grumbling. When enough American citizens grumble they become a political force. It matters not that Uncle Sam had already eaten humble

(*Turn to page* 300)

SOUTH AMERICA'S FORESTS

Though Unrivaled in Extent and Variety, They Remain an Unknown Factor in Meeting Postwar Demands for Wood

By EUGENE F. HORN

NO one knows the exact area covered by the virgin forests of South America; nor is there a complete classification of the various trees, shrubs and herbaceous plants. Yet enough is known to state without challenge that South America's forests are unrivaled in extent and variety.

The best estimates indicate that the forest area exceeds 2,700,000 square miles. Known indigenous species of the plant kingdom approximate 50,000. As to forest trees, more than 2,500 species are now recognized in the Amazon Basin alone.

Because the boundaries of several South American countries have not as yet been definitely determined, it is possible in several cases only to approximate the forest area by countries and colonies. As will be noted from the table on this page, forested areas vary from three percent in Uruguay to eighty-eight percent in British Guiana. Brazil, with 1,000,000,000 acres of forest, leads all South American countries. Bolivia and Colombia have around 150,000,000 acres each, while Argentina has 125,000,000 acres in forest. Uruguay, on the other hand, has but 1,500,000 acres of forest, Chile 13,750,000.

With few exceptions, the trees belong to the broadleaf, or hardwood, varieties. The exceptions include the erroneously termed parana and Chilean pines of southern Brazil and southern Chile, respectively, a few species of cedar and cypress in southern Chile and a small number of coniferous species found growing in the Andes of Colombia.

Except for the temperate area in southern Argentina and Chile, South America's forests are tropical or subtropical in character. They are noted for their large number of different varieties of timber found growing on limited areas, only a few of which are merchantable. On any tract of large size, at least fifty varieties of commercial timber and many trees of secondary importance are found. The removal of the timber varieties therefore presents difficult and costly logging problems. Indeed, quite frequently it costs more to remove a few scattered trees than they are worth. And the difficulty and inconvenience of sawing so many different kinds of logs increases the cost of manufacturing them into lumber, as well as the cost of seasoning, classifying, storing, and distributing the finished product.

But these are not the only factors that tend to retard the development of South America's forest resource. Another is lack of transportation facilities. Also, comparatively small areas of the forested regions are free from the serious handicaps of adverse climate or topography—or both.

FOREST AREAS OF SOUTH AMERICA

Country or Colony	Forest Area (Acres)	Percent of Total Area in Forest
Argentina	125,000,000	17.9
Bolivia	150,000,000	46.0
Brazil	1,000,000,000	47.0
Chile	13,750,000	7.2
Colombia	150,000,000	52.2
Ecuador	58,250,000	53.9
British Guiana	51,000,000	87.9
Dutch Guiana	30,000,000	80.0
French Guiana	17,500,000	79.0
Paraguay	28,250,000	24.7
Peru	175,000,000	56.0
Trinidad and Tobago	460,000	36.0
Uruguay	1,500,000	3.1
Venezuela	120,750,000	53.9

Despite these unfavorable factors, woods grown in tropical South America, due to the wide range of their physical and mechanical properties, have an exceedingly diversified application in commerce and industry. For example, the balsa tree of Ecuador yields the lightest of all commercial woods. On the other hand, lignumvitae, grown in Colombia and Venezuela, is one of the hardest and heaviest woods known. Because of an oil it contains, it is the only wood in the world which has proved to be suitable for the bearings of propeller shafts in steamships.

Other woods, such as *pau ferro* and *aroeira vermelha* of Brazil, *quebracho colorado* of Paraguay, and *cascol* of Ecuador, are so hard and dense that an ax of the best quality steel makes little impression on them. Some varieties resist the attacks of the toredo and other marine borers and are, therefore, in greater demand for piling, dock timbers, and for ship building. Still others, such as *puy* of Venezuela and Trinidad, and *guayacan* of Ecuador, are exceedingly durable when exposed to the weather and are highly valued for such purposes as poles, posts and crossties. Still others, such as the widely distributed *cedro*, or Spanish cedar, are not susceptible to the attacks of termites and other wood destroying insects and are, therefore, in wide use for furniture and construction purposes.

Then there are South American woods, such as rosewood and mahogany of Brazil, and laurel and balsamo of Ecuador, that are highly figured, possessing undulating grain and are capable of receiving a brilliant polish, making them highly suitable for cabinet work, interior trim, pianos and similar purposes. As to color, every shade and tint, from the most brilliant to the most delicate, are found. Colors in some woods are solid; others are veined or mottled. The veins in some are black, in others, golden—while occasionally a perfectly blended combination of colors is found.

But wood is not the only product of these tropical forests. They produce rubber, quinine, dyes, belata, tannins, resins, chicle and other gums, carnauba and other waxes, vanilla beans, Brazil nuts, vegetable ivory nuts, kapok and other fibers, rotenone and a large variety of oils.

Up to the present time no survey has been made of the vast resources contained in these tropical and sub-tropical forests. Needless to say, one is urgently needed. Such an inventory would neces-

sarily include the botanical classification of all trees, shrubs and herbaceous plants.

Tests should be made to determine the physical and mechanical properties of the most promising woods. Field surveys would be necessary to determine the quantity and accessibility of promising local species. In many cases, a chemical examination should be made of the roots, bark, wood, leaves, flowers, or fruits of certain plants to determine if they contain products of value. A thorough scientific investigation of this enormous flora would no doubt reveal many new products which would find application in modern industry. It was only a few years ago that the milky juice of certain shrubs used by the Brazilian Indians to poison fish was discovered to contain a high percentage of rotenone—a valuable insecticide.

It is generally accepted that there will be an enormous demand for lumber for the reconstruction of war devastated towns and cities of both Europe and Asia. Lumber has never been as widely used for building construction abroad as in the United States, but large quantities are normally used for flooring, ceiling, sash, doors, blinds, interior trim and roof trusses. Furthermore, there will be a great European demand for temporary buildings of all kinds, and wood in the form of lumber, plywood, or fiber board is the ideal material for this purpose. The United Nations Commission of Postwar Requirements has estimated that 8,000,000 tons of lumber will be required by the occupied countries alone during the six-month period following the war.

The condition of the forests of the occupied countries, as well as Sweden, Finland, Russia and other lumber producing nations of Europe, should be known within a reasonably short time, now that Germany has surrendered. Determination can be made then of the extent European forests can meet lumber requirements for the rehabilitation of Europe. It is generally believed that it will not be great. Moreover, postwar demand for lumber in the United States and Canada will be enormous due to the suspension of all but essential construction since 1942. It seems logical therefore to assume that the forests of the United States and Canada will be taxed to the utmost in supplying domestic needs as well as the wood requirements for reconstruction in Europe and Asia.

Before the war the forests of the western hemisphere supplied forty to fifty percent of the timber consumed in the entire world. The United States and Canada produced ninety-five percent of the total, notwithstanding the fact that they possess only thirty-seven percent of the forested area of the hemisphere. In other words, the remaining countries and colonies of the Americas, possessing seventy-three percent of the forested area, supplied only five percent of the total timber produced.

It appears evident, therefore, that a fact-finding survey should be made of the forest resources and forest industries of South America. A recent survey made by the U. S. Forest Service in Chile revealed that production of forest products could be increased 250 percent without impairing the productive capacity of the forests. At least an appraisal should be made of the logging and milling capacity of South American countries to determine what each can contribute to postwar international lumber requirements.

Such a study would be especially helpful to the countries planning postwar development of their forest resources. Several have forestry departments and some possess modern timber testing laboratories. A vast amount of useful information and data has been collected on the forest resources and forest products of South America by various United States governmental agencies, notably the Foreign Economic Administration, the Forest Service, the Office of the Coordinator of Inter-American Affairs and the Rubber Development Corporation. All of the information and data thus collected should be compiled in one report and correlated with the information and data obtainable from the forestry departments and timber-testing laboratories maintained by various South American countries.

Contrary to popular belief, South America is not "a land of untold riches" nor "a land of opportunity." Rather, it is a land of baffling, unsolved problems. In many places the riches are there and so are the opportunities—but they are opportunities for exploitation and development by large scale coordinated and scientifically guided effort rather than for the individual settler. Mere courage and physical strength are not sufficient requirements for success in tropical enterprises.

Development of the natural resources of South American countries affords unusual opportunities for the employment of American capital and technology. The tropics and their riches will ultimately belong to those who skillfully apply the multiple resources of human knowledge in the development of their natural resources.

ROBERT STERLING YARD DIES

AT THE time of going to press, word comes of the death on May 17 at Washington, D. C., of Robert Sterling Yard, nationally known editor and conservationist. He was eighty-four years old.

One of the founders of the National Parks Association, and its secretary from 1919 to 1934, he also edited its official publication, the *National Parks Bulletin*, and conducted the National Parks News Service.

In 1935 Mr. Yard was one of the founders of the Wilderness Society and served as its president and permanent secretary up until the time of his death. He also was editor of the society's magazine, *The Living Wilderness*. During this decade he maintained active interest in the national parks movement, serving as advisory editor of the *National Parks Magazine* and on the executive committee of the National Parks Association.

A native of New York State, Mr. Yard was graduated from Princeton University in 1883, and shortly thereafter began a career in journalism which was to lead him, in 1891, to the editorship of the *New York Herald*. Later, in 1911, he became editor-in-chief of *The Century Magazine*. Always interested in the national parks movement, he resigned in 1914 to become actively associated in this work, accepting an appointment as chief of the editorial section of the National Park Service.

During his long service in the conservation field he served on many committees and boards, notably the Joint Committee on Survey of Federal Lands and the Advisory Board on Education and Inspirational Uses of the National Parks. From 1941 he was trustee and manager of the Robert Marshall Wilderness Trust.

He was the author, among other publications, of *Glimpses of Our National Parks; The National Parks Portfolio; The Book of the National Parks;* and *Our Federal Lands.*

YOU CAN'T BLAME BRUIN

For Biting the Hand That Feeds Him

By GRACE V. SHARRITT

THE last rays of the setting sun streaked the summer sky while woods shadows deepened in mystery and silence. Twilight comes fast in northern Michigan and we didn't want to miss one exciting bit of the wildlife comedy which we soon expected to see.

The backdrop was perfect. Cedars and oaks and pines with occasional notes from whip-poor-wills, an owl, a loon. Flood lights blazoned the impromptu open-air stage and the props were two immense garbage pits built on platforms at the edge of the forest. They were filled and ready.

"There's one coming now," whispered our driver. "Lord, I'd hate to meet that guy in a blind alley on a dark night." A girl giggled. "Hi, Toots, look at the cubs!" a man hissed from a car beside us on the road. Another low pitched voice asked, "Did you see the one with a mug like Andy Gump?" We shook with suppressed laughter and excitement. Car spotlights played on the performers—and the show was on.

"Bear Shows," these exhibitions are called, and they are aimed to please tourists in wilderness country who rarely see a wild animal in action outside the iron bars of a caged zoo, or the sawdust ring of a circus.

Within an hour a dozen bears of various ages and personalities were giving us who comprised the smart-hick audience of between forty and fifty adults an entirely unrehearsed burlesque. We sat in our cars and station-wagons—this was before drastic gas rationing—safe and comfortable. A ravine divided us and the savory stage.

We had been warned to stay in our cars. On no account should we attempt to feed the bears. That was one of the strict rules of the resort. The risk of danger added to the evening's innocent gaiety. A Walt Disney act was in full swing beneath the stars as the cubs, stuffed with cantaloupe rinds and salad greens, cuffed each other all over the place, climbing trees and frisking in high jinks. We rolled in our seats at a coquettish trollop who insisted on cavorting mincingly through the pit of chicken bones and toothsome garbage. It was fun.

A Tarzan in bearskin —now reduced to panhandling—he is really a dangerous animal

One huge bruin, a Tarzan in bearskin, attracted by our sotto tones and suppressed merriment, looked up from his dessert of watermelon shell and stared us out of countenance. He made a gesture towards us, padding slowly on big feet. We shrieked with laughter and drove away into the beautiful night.

However, as I walked alone to a cabin in the woods the next morning I noticed fresh bear tracks in the sandy road. I saw where the black cherry trees had been lately broken. The green sanctuary of wildflowers and woodpeckers and deer suddenly lost its charm, for I remembered tales I had heard about the tame bears in Yellowstone and Yosemite Parks. I began to understand the great harm that could be done to both wildlife and to foolish naive resorters like me. And to resort owners who are only interested in supplying guests with what they want.

For a wild bear once nourished on white man's food becomes a tramp bear. "And a tramp bear is a problem bear," warns Farley F. Tubbs of the Game Division, Michigan Department of Con-

servation. Writing in *Michigan Conservation* back in 1942, he put it this way: "Bears make an excellent show, and in certain localities of Michigan they serve the tourist trade. . . . The bears learn that to obtain the garbage they must tolerate people. After a certain amount of contact with people they lose their fear of man and trouble begins."

The trouble adds up to problem bears which Michigan farmers and residents in bear country are discovering can mean nuisance and even near tragedy. Like what happened to the woman who was driving along a highway in the Upper Peninsula. Although she did not stop the car when a bear blocked the road, the trespasser managed to climb on the hood. The woman frantically speeded up the motor in an effort to throw bruin off. She finally succeeded, but not until he had angrily hooked the running board and given her a severe nervous shock. It might be added that a black bear weighing between 250 and 500 pounds can smash a car.

Another incident, among the many brought to the attention of the State Conservation Department, occurred when a bear raided a campsite on Pickerel Lake near Iron River. Bruin got into the tent where a couple of young women were sleeping. He knocked over the tent, ate a box of marshmallows and then, disgruntled because there was so little food, bit one of the girls.

Game managers from northern Michigan areas report the foolhardiness of tourists who refuse to look upon bears as animals of the wild. There was the group of laughing campers gathered around a panhandler bear after he had cleaned up one camper's tent. They were taking pictures and having a general good time—were even feeding the thief special dainties. Then without warning, bruin attacked. He took a vigorous swing at a man because the food being offered wasn't coming fast enough. Without compunction he bit the hand that fed him.

Familiarity breeds contempt—and trouble all around. His fear of man gone, a disgruntled bear will not hesitate to claw or bite the hand that feeds him

Ironically enough, although bruin was not primarily to blame, the game manager was indignantly called to shoot the bear and to make the campsite safe for visitors.

Several summers ago marauding black bears attacked livestock in Menominee and Delta counties of the Upper Peninsula—and a 350-pound bear was shot near Isabella by a farmer after it had been reported chasing his wife and child. There is a year 'round open season on bears in Menominee and Baraga counties and farmers elsewhere can shoot bear that threaten livestock. Bears are a special problem in these counties because many farms are pushed deep into forests on the tops of moraines and livestock is more inviting than the natural food that bears find in forested country or swamplands.

The tragedy of the situation is that a bear in his wild natural state is practically harmless to man, shunning him on all possible occasions. But once a bear has tasted the white man's food he becomes a panhandler, has little interest in digging an honest living for himself. He will forage from whatever sources are available — and, when thwarted in his efforts, will use any means, be it killing, to get this easy food. He is spoiled forever—is no longer good for himself or for the woodland which was once his happy natural home.

Why grub for ants, hunt turtle eggs, or break open a cache of tree honey when he can get all the food he wants on the cuff? Why indeed? Just as the human derelict bumming a parasitic existence is a menace to society, so is the borderline bear a menace to those who thoughtlessly extend the feeding hand. The pathetic fact is that bruin, through no fault of his will, suffers the consequences.

The national parks long ago abandoned the lure of "Bear Shows" to visitors. Instead, they are vigorously promoting anti-feeding campaigns. As Victor H. Cahalane, biologist of the National Park Service and author of the book, *Meeting The Mammals*, says: "The unhealthy situation, the presentation of animal life in an unnatural setting, the danger to people, and the possibility in time the bears themselves would become semi-domesticated, forced a wholesale revision of our ideas of wildlife management in the parks."

As a result of this unhealthy relationship, Yellowstone National Park keepers were forced to kill eighty-two bears one recent summer to protect visitors in the park. It was necessary to kill these dangerous bears; yet the animals were sacrificed on the pyre of civilization just as surely as the buffalo or the passenger pigeon once gave their lives to man. The bears were sacrificed to their natural woodland society of wild creatures because they had lost their instinctive fear of man and respect for his property.

"Carefully accumulated statistics on bear problem cases in Yellowstone National Park," says Mr. Cahalane, "clearly demonstrate that bear trouble is human trouble. Feeding an animal along the roadside induces him to abandon the natural mode of living to take up instead a life of racketeering. Constant close

association with people causes the bear to lose the fear that is the basis of respect. It is a logical consequence that he will attack people and tear open locked automobiles and cabins to satisfy his new appetites.

"The National Park Service is now taking various steps to remedy this situation . . . the success of these steps depends finally and almost entirely upon the concerted action of the visiting public. When the public observes the Service regulation: 'Feeding Of Bears Is Prohibited', the normal relationship between bears and humans will be restored. Then bears will be bears and not racketeers."

Until that time and during this period of low tourist travel—but with an eye to unprecedented vacationing when peacetime regulations will permit—the Park Service is making the campgrounds and other developed areas in the parks less attractive to bear panhandlers by frequent collections of garbage, by incineration of garbage and other waste. And whenever possible by supplying bear-proof garbage and food containers for the use of visitors.

"Bears that persist in frequenting roadsides and developed areas are removed," states Mr. Cahalane. "Whenever possible, black bears are trapped and moved to a considerable distance.

Although "bear shows" have been abandoned in national parks, they persist elsewhere as a tourist lure. This sign points to a "show" pit in northern Michigan

Unfortunately, many of these animals return and must be destroyed if they become dangerous. Because of the danger to people it is customary to destroy grizzlies that enter places frequented by the public."

While bears in Michigan are still being introduced to the free-grub lunch table *a là* garbage pits, or as recreational roadside attractions, National Park bears are having hard times scrimmaging for even a cast-off crumb of cake. In the parks where incinerators are lacking or when the plants cannot be operated because of a shortage of funds or personnel, the garbage is collected and hauled to distances of from two to eight miles and burned daily. And not only is the waste food burned but liberally sprinkled with an oil before burning to reduce any savoriness which might escape the flames.

But educating the citizenry is another

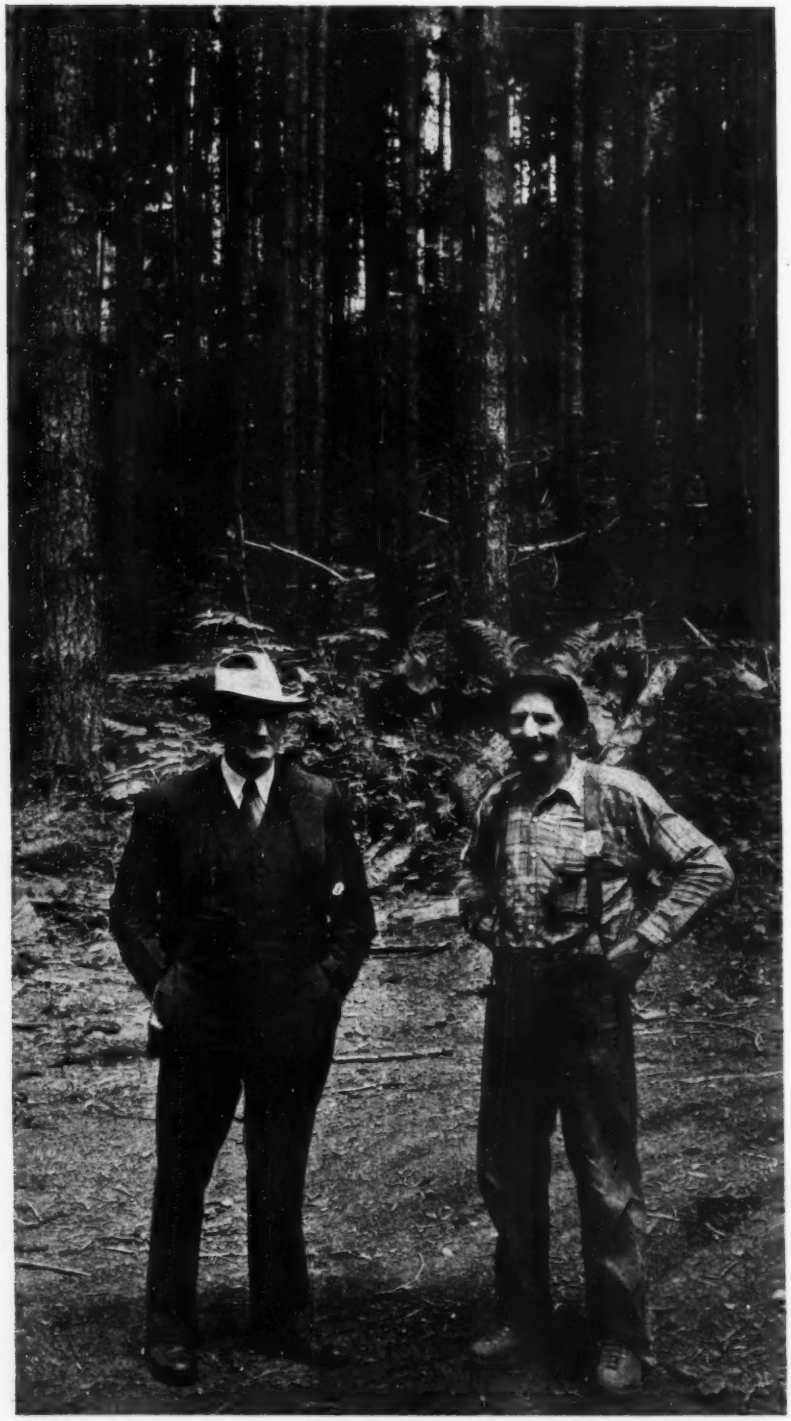
(*Turn to page* 306)

And here is what tourists see—bears, some of them large enough to smash a car, feeding in an open garbage pit at the edge of the forest

"BACK-FORTY" PAUL BUNYANS

How Snohomish County, Washington, Backwoodsmen Are Giving Cooperative Farm Forestry a New and Profitable Meaning

By ARTHUR M. PRIAULX



Jasper Storm, ex-logger, at right, shows his trees to Forest Engineer E. H. McDaniels. He is growing sawtimber on land logged fifty years ago

FOR nearly a century loggers have worked away harvesting the great Douglasfir and western hemlock forests in Snohomish County, Washington, and on much of the area young forests took their place as fast as the big trees were cut. Today in the vicinity of Monroe, where the Skyhomish and Snohomish rivers meet, much of this one-time virgin forest land is in small ownerships, held by farmers or "stump ranchers," in tracts of from seven to 345 acres.

This is backwoods country. But the people are not backwoods in their thinking. In this region today is being conducted a plan of cooperative farmer forest land management that deserves wide attention. These are not idle words, for thirty percent of all forest land in the United States is in farm ownerships, averaging twenty-seven acres a farm. Thus it seems obvious that any well-planned program of harvesting and managing farm forests can be adapted to benefit woodland-owning farmers everywhere.

Eighty farmers, owning something over 10,000 acres of forest land, mostly second growth less than sawtimber size, and desiring to make the most out of their stands, formed in 1940 (see AMERICAN FORESTS for May, 1943) the Washington Forest Products Cooperative Association, a non-profit corporation. They employed a logger-manager, bought a tractor, trucks and a portable jammer. A management plan for each forest tract was prepared and each owner-member agreed to follow the plan, how much to cut, when to cut, and what type of trees to plant.

The logger-manager, L. K. Simms, takes orders for timber products, directs woods operations, runs a crew of seven or eight men (mostly owner-members) and builds equipment. Seventeen of these owners, more enthusiastic than

their neighbors, applied last fall for membership in the West Coast tree farms organization. They were promptly accepted after E. H. McDaniels, forest engineer for the West Coast Lumberman's Association, had inspected their operations. Said Mr. McDaniels: "These tree farmers have done a splendid job of management. Their lands are in good shape. They have cleaned out windfalls and snags and thinned the stands so that maximum growth will result."

It was a great day at Monroe when, in February, the seventeen farm forests were formally dedicated.

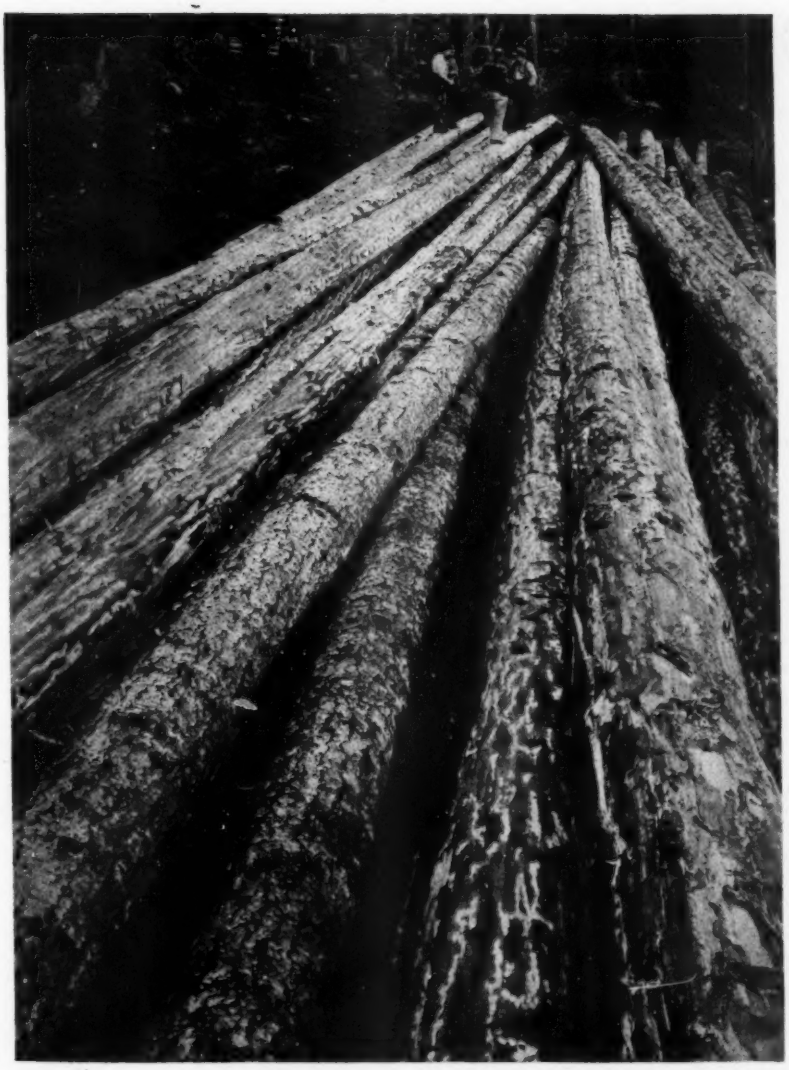
"This action raises a new landmark of industrial forestry," said Forester McDaniels. "The tree farm movement was formed by the forest industries to establish specific standards of private forest management and practice. The system has been restricted to large units because supervision by technically trained foresters is a basic requirement of membership. The Snohomish County Forest Products Cooperative requires productive practices of its members, and they are advised and aided by foresters of the United States Soil Conservation Service. So West Coast loggers are happy to welcome the seventeen Snohomish County farmers as fully qualified members of the tree farm fraternity."

George L. Drake, general superintendent of the Simpson Logging Company and former president of the Western Forestry and Conservation Association, presented certificates to the new members.

Typical of these seventeen "back-forty" Paul Bunyans is Jasper Storm, fifty-year-old retired logger, who after spending a quarter of a century in the deep woods as a faller decided to put his knowledge to work for himself. He bought 360 acres, all but fifteen of it in second-growth timber, some seventy years old. He has been spending most of his time cleaning out his stands by taking fuelwood from windfalls, and thinning. He has been cutting fish-trap piling while thinning—from trees 175 feet high.

Storm's land was logged about fifty years ago and now has an excellent stand of young timber, most of which he will permit to grow to sawtimber size, despite the attractive current piling market. The trees he is cutting for piling are from stands too heavy to grow properly. Storm believes a man can make a good living for his family on 160 acres of timber, provided he is willing to practice good forestry and handle it as judiciously as his plow land.

Manager Simms is responsible for much of the success of this cooperative project, for he has shown the forest owners where they can make forestry pay. Last summer he worked on nine of the larger farm forests and after paying rent for the association-owned tractor, trucks and jammer, along with wages, stumpage and his own salary, distributed $7,000 in profits. The owners, of course, got the stumpage income and a substantial part of the wages, in addition to the profits.



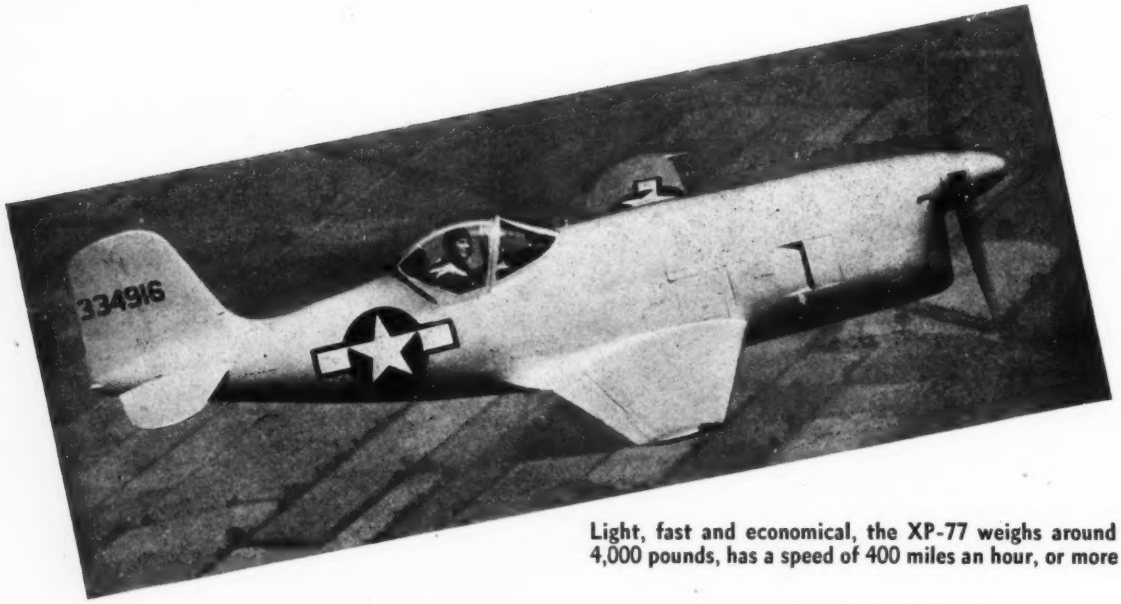
Trees grow tall in Snohomish County, as this crop of high-grade piling will testify. They were removed under a selective cutting program

Since 1938, the area has been included in a soil conservation district, so the U. S. Soil Conservation Service forester does the marking, and he also has drawn up a plan of handling for each owner, defining the products and the yearly cut, and specifying which jobs shall be done by the owner in spare time and which by the logger. The spare time jobs include cutting fuel, pulpwood and poles. Transportation, markets and specifications are the logger-manager's responsibility.

The real reason why the Snohomish County project looks good is simply this —there's money in it. One owner who has a good sized woodland mostly Site I (good growing land), told how the forester counted the rings on the top and butt of a piling stick and figured the yearly growth at three feet, two inches. Stumpage price for this piling was seven to ten cents a foot. That made twenty to thirty cents a year a stem, and the number of stems an acre is 150 plus. On this lot they were taking from twenty to forty sticks an acre and leaving the stand in fine shape. To a farmer, this is sound business—forestry in language he can understand.

(*Turn to page* 307)

XP-77—NEW ALL-WOOD FIGHTER PLANE



Light, fast and economical, the XP-77 weighs around 4,000 pounds, has a speed of 400 miles an hour, or more

AN all-wood fighter plane has been announced for the U. S. Army Air Forces. Designated the XP-77, and manufactured by the Bell Aircraft Corporation, the new fighter is light, fast and economical—a challenge to the trend toward larger, heavier, and more costly fighter planes.

The XP-77 weighs around 4,000 pounds and has a speed of 400 miles or more an hour. In test flights, fuel consumption has been low. Since the advent of the P-12, which weighed slightly more than 3,000 pounds when it was designed ten years ago, the single-place fighter has grown into units running from 8,000 to 20,000 pounds. This increase in size and weight, according to Robert J. Woods, chief design engineer of Bell Aircraft, who designed the XP-77, was necessitated by demands for greater performance and fire power. Naturally the unit cost of the planes, fuel consumption and maintenance increased accordingly.

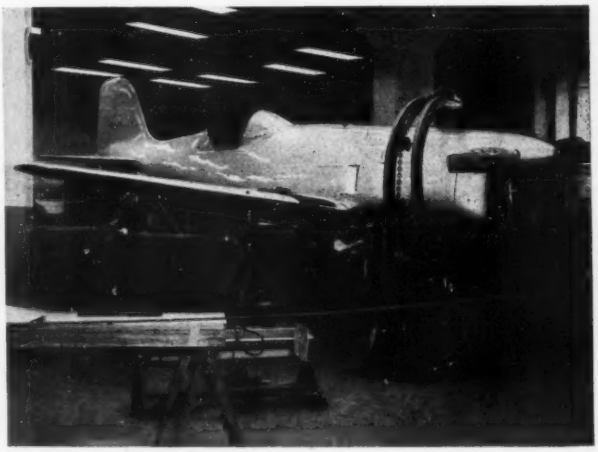
Since the beginning of this trend, much thought has been given to the feasibility of producing smaller planes to simplify manufacture, operation, maintenance and shipment. The all-wood XP-77 is the first concrete attempt in this direction.

Powered by single in-line Ranger V-770 engine, the new all-wood fighter is twenty-two feet, ten inches long, with a wing span of twenty-seven feet, six inches. By comparison, the P-63 Kingcobra is thirty-two feet, eight inches long, and has a wing span of thirty-eight feet, four inches. The famous P-47 Thunderbolt is more than thirty-six feet long and spans over forty inches. The Kingcobra weighs around 8,500 pounds; the Thunderbolt, considerably more.

The all-wood plane carries two synchronized, fifty caliber machine guns and a cannon firing through the propeller hub. Its wood structure is said by Bell Aircraft to be representative of the best knowledge of wood airframe design today. Materials used in bonding conform to existing government requirements. Sitka spruce was used in the experimental machines, but Bell technicians realize that other wood species would also be satisfactory material. Every effort has been made in the design and construction to avoid complicated processes or fabrication.

No construction is employed in the wood parts which is beyond the scope of any shop equipped to make molded plywood structures with thermal setting resin glues. The plane has been designed to permit sub-assembly manufacture and a survey by the Bell Corporation disclosed thirty-five independent shops that could produce finished component parts.

Jack Woolams, Bell's chief test pilot, who made the first flight and conducted flight testing, declares that the XP-77 is a "stunt flier's dream." Other pilots have commented favorably on its maneuverability and its finely balanced, fingertip control.



Of simplified design, the new plane is within the scope of any shop equipped to make molded plywood structures

SILT IS A SABOTEUR

THE importance of water storage in the economy of war production in this country is graphically pictured by Hugh H. Bennett, chief of the U. S. Soil Conservation Service, in the following words: "Our 9,000 larger dams and impounding reservoirs supply one-third of the nation's electrical power, furnish water to areas where one-fifth of the nation's people and about one-half of its war industry are located, and irrigate lands that produce about five percent of the annual value of its agricultural products. These dams and reservoirs have cost us nearly $5,000,000,000.

"Yet," Mr. Bennett continued, "many of the reservoirs that are vitally important to our war effort are losing one, two three and even five percent of their capacity every year because of silting that results mainly from soil erosion." In exceptional cases, he said, important reservoirs have filled up in from one to five years. Already, nearly 2,000 smaller reservoirs have been filled to the top of the dam with debris of erosion, washed out of unprotected fields and pastures.

The burned-over forest is this saboteur's ally—clogging headwater streams with tons of sediment

So is the eroded farm hillside. Surface and gully wash add enormously to the silt that loads up reservoirs

"During a three-month period recently," he declared, "silting in power storage reservoirs in certain southern states reduced electrical production by 90,000,000 kilowatt-hours." This lost power would have made seven 2,200-ton destroyers, or thirty Liberty ships, or 180 Liberator bombers, or 500 M-4 tanks. It falls just short of power needed to produce an aircraft carrier like the new *Lexington*.

Water supply for many communities is in danger, Mr. Bennett warned, because their reservoirs are one-quarter to one-half filled with sediment at a time when population and industry, boosted by war demands, require two and three times the usual amount of water. "In normal times, the answer to suddenly increased demands or to diminished supplies might be the construction of new reservoirs. During war, however, we cannot spare the steel, the concrete, the labor and the hundreds of manufactured items that go into new dams—except in the direst emergency. Somehow, we must get along with what we have."

Numerous methods have been devised to control silting. For example, engineering experts have developed a method of predicting with fair accuracy when a run-off of water to reservoirs will bring in unusual quantities of silt—and how much. Since soil, once in the water, flows in measurable levels—in a strata pattern—it can be run off, through vents in the reservoir wall, if the disposal level is accurately gauged. Brighton Dam, in Maryland, has been built with these vents.

"But it is not generally practicable," Mr. Bennett emphasized, "to clear a major reservoir of sediment once it has filled up. Moreover, when a reservoir is filled to the point where it has no further value for storage, not only is the investment lost, but the irreplaceable site is gone. The only practical means by which we can permanently protect most of our reservoirs from untimely loss from silting, is by watershed control and soil conservation."

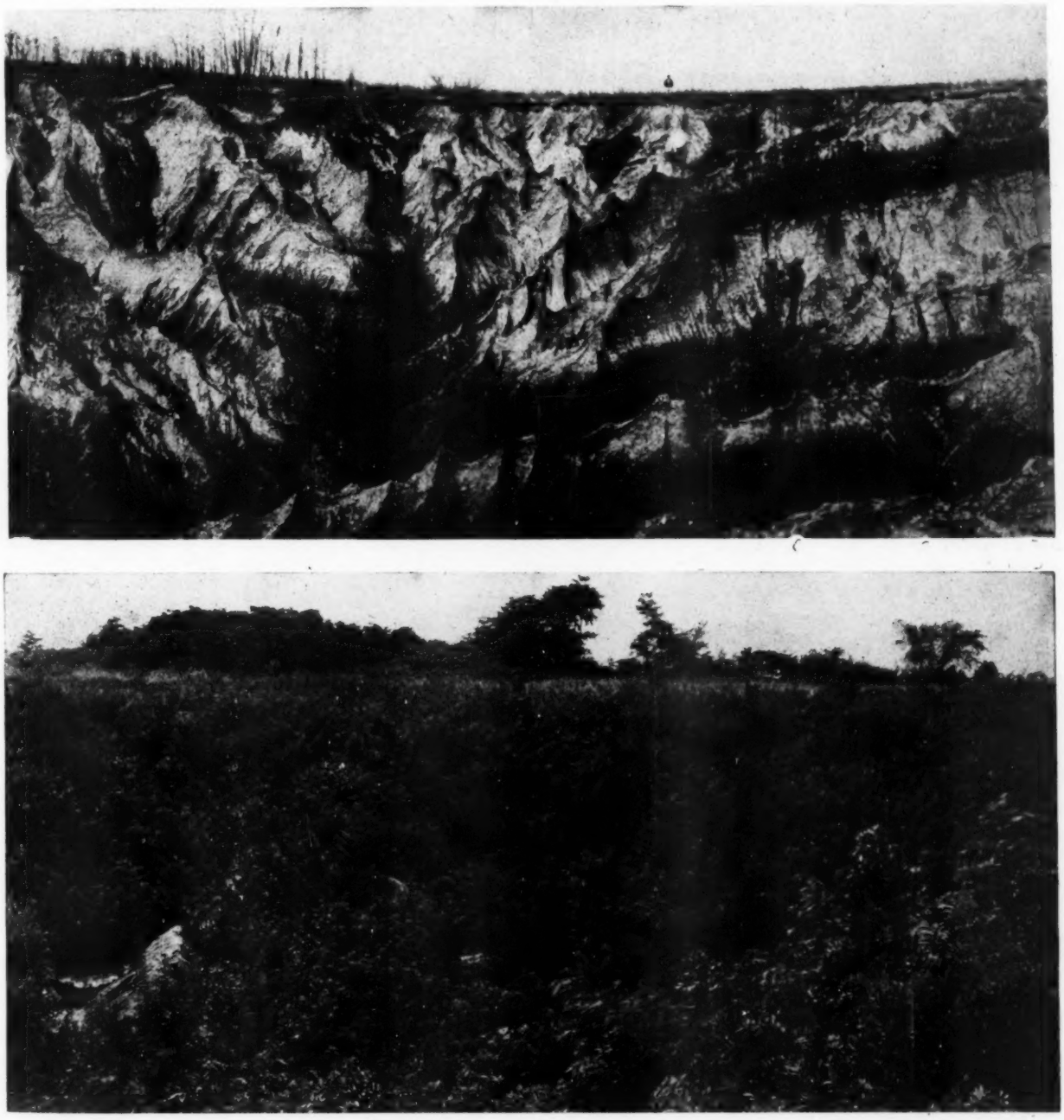
The Soil Conservation Act of 1935 made it possible for the Soil Conservation Service to open a new avenue toward better watershed protection by developing a nation-wide system of soil conservation districts. To date, 1,250 such districts have been established. They include 2,500,000 operating units and 3,000,000 farms, bringing conser-

What happens when silt is on the march. The center picture of a power reservoir in Georgia was made in 1914—the lower one twenty years later when it was completely filled with sediment

vation practices to approximately 700,000,000 acres.

The effect of the forest in stabilizing stream flow, in preventing soil erosion, has been recognized, of course, for more than a half century. Two of the oldest forest reserves, now national forests—the Tonto in Arizona and the Angeles in California—were set aside primarily for the protection of irrigation projects and municipal water supplies. And since 1924 nearly sixty percent of the purchases of forest land made by the federal Forest Service have been primarily for watershed protection.

Yet despite these steps, the annual cost of reservoir silting is upwards of $50,000,000. Silt is still taking a heavy toll of the nation's water storage capacity, now a vital cog in the economy of war production. Silt is a saboteur. Watershed control, in the forest and on the farm, is the most effective long range weapon with which to fight this enemy. It goes to the root of the problem, aiming to eliminate the cause of silting. In the words of Carl B. Brown, head of the Sedimentation Section, Soil Conservation Service: "It is primarily the surgery that removes the canker, by comparison with the palliative ointments that may keep the patient on his feet a few years more."



The only practical means by which reservoirs can be permanently protected from serious silt damage is by watershed control and soil conservation. This shows how badly gullied land can in two years be restored by planting trees

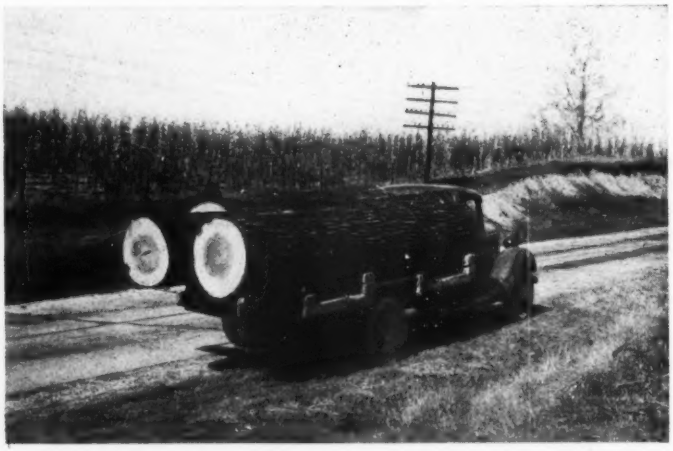
OUR REMARKABLE HOOSIER HARDWOODS

By ROY C. BRUNDAGE

This article previews the findings in Indiana of the Forest Resource Appraisal of The American Forestry Association. Rhode Island was presented in September 1944, Michigan in May 1945.

TO most strangers, and even to some of its own people, Indiana is a place of surprises. Farmers own ninety percent of its land area. Yet this avowedly agricultural state boasts one of the world's most famed industrial areas—the East Chicago-Gary-Hammond district along Lake Michigan. It has no very large cities, as do its neighboring states of Ohio and Illinois. Yet there are scores of county seats and other towns where manufacturing is economically significant.

A person can cross Indiana from east to west, or vice versa, without being really aware of forests as a feature of the landscape. This is not to be wondered at, since the present woodland area is but slightly more than 3,000,000 acres, or less than fifteen percent of the state's area. Yet it is a fact that a surprisingly large number of the factories scattered about the countryside use wood as a raw material. And it is further true that more than 800 Indiana sawmills, which supply wood to these furniture and machinery and tool factories, obtain most of their logs from local sources.



Upwards of a million fine, big logs come from Indiana's farm forests each year. These are sweetgum "peelers" for veneer

From forests, the existence of which has been largely ignored, have been coming each year upwards of 1,000,000 fine, big logs to be sawn into lumber, sliced for veneers, or turned into handles. During the war, such material has been found suitable for many special uses. Actually the farmers of Indiana, who never have talked much about their trees, appear to be in a class by themselves as producers of high grade hardwood timber.

The state ranks high in manufacture of household and office furniture, kitchen cabinets and caskets. In addition to the many excellent sawmills producing high quality hardwood lumber, there are many plants which turn out face veneers and container stock. Altogether these industries employ about 26,000 people on a year-round basis, and give part time employment to thousands of farm workers. These figures command attention, for such workers represent more than five percent of all

In DuBois County, where the sawmill shown at right is permanently located, more than half the wage earners in cities and towns work in wood-using industries. At left, is a typical fruit basket plant, using beech, sycamore, elm and soft maple

industrially employed.

As noted, sawmills and other *primary conversion* plants obtain most of their logs within the state. Manufacturers of goods into which wood enters buy the output of these plants, but they also import part of their materials. Since there is little pine or other coniferous forest growth to be found at home, practically all softwood construction lumber comes from other states. The tracing of sources of such imports is, however, another and different story.

It appears that Indiana's woodlands are a very rich and important resource, annually supplying a substantial part of the hardwood needed for the state's industries. This has been going on, quietly, for many years, largely unnoticed until the special demands of war focused attention upon all sources of supply, here and elsewhere.

Now that foresters are looking closely at these Indiana forests, it appears that management is not as good as it might be. Woodland owners condone overcutting and uncontrolled grazing of cattle among their trees. In the southern part of the state they are prone to let fire run wild over the ground. These owners have grown some excellent timber, yet the real point is that they have failed to obtain the best possible results and profits. Their management practices have resulted in the reduction of per acre volumes and deterioration of species and timber quality. Actually, current drains upon the forest far exceed growth. Stands are being cut too closely, and because of grazing and fires little regeneration occurs. This is like killing the goose that laid the golden egg, for year by year the growing stock or base for timber growth diminishes.

Probably the first and greatest need is for an intensive educational campaign among woodland owners and woods and mill operators, to teach and secure application of proper management of all wooded areas. Foresters are agreed that permanently effective management cannot be realized until livestock is removed from the Indiana forests.

For lands outside state and federal districts in the southern part of the state, more determined fire protection is needed. Another urgent need, in normal times, is a means of utilizing low grade timber, thus permitting removal of defective and otherwise inferior trees, so that the composition of future stands may be improved.

According to the sixteenth census, the state's total area is 23,226,240 acres. More than 21,000,000 acres are in farms, showing clearly that farming is the pre-eminent land use. In contrast, the present forest land area is but 3,302,700 acres. Yet there are indications that agriculture has become a marginal use, or worse, upon considerable portions of the southern counties. The Land Use Planning Committee of Purdue University estimates that no less than 600,000 acres of submarginal crop and pasture land might profitably be converted to forest.

From the outline map on page 282 the reader can obtain an idea of the distribution of Indiana's forest lands. This map also shows the boundaries of eight units into which the state was divided for purposes of making The American Forestry Association's appraisal. Each unit is made up of several contiguous counties in which forest conditions were found to be fairly uniform. Thus, by intensive study and sampling of one or more typical counties in each unit, reliable facts could be obtained for application to the others.

In units 1, 2, 3, 7 and 8, aggregating sixty-one counties, and accounting for two-thirds of Indiana's area, the forest acreage is less than nine percent of the land total. Included in these units are many of the leading agricultural coun-

This well stocked beech-maple stand in Ripley County is being cut selectively. Such logs bring high prices. Clear cutting, below, on the other hand, produces both small and large logs—and the owner must wait a long time for another crop

Killing the goose that laid the golden eggs—clear cutting such as this reduces the base for timber growth

ties which compose the corn-hog belt. Units 4 and 5 have more woodland—seventeen and eighteen percent, respectively, in that category. In unit 6 is found about forty-two percent of all forest land in the state, or one acre out of three in these eighteen counties.

Here in unit 6 is located the federal purchase unit from which will be organized the Hoosier National Forest. Most of the state's own forest holdings are found here, in Morgan, Monroe, Brown, Jackson, Clark, Washington, Martin and DuBois counties, and acquisition by the state is still going on. In unit 6 is also to be found much of the sub-marginal farmland mentioned earlier in this discussion.

For purposes of this appraisal, Indiana's forests have been classified in seven *types*, according to mixture of species found in certain localities or under certain conditions of soil and topography. The *oak-hickory* type contains several species of oak and hickory. The oaks—white, burr and red—are most valuable in this type. *Beech-maple* type usually contains both beech and sugar maple in considerable quantities, with small percentages of white ash, tulip poplar, elm, black walnut, and possibly some minor species.

Two *bottomland* types are recognized. One is characterized by swamp white oaks, elms, sycamore, cottonwood and black ash; the other by pin oak and sweetgum. *Virginia pine* type contains the conifer for which it was named, also various oaks. *Redcedar* and *black-locust* types are chiefly composed of the name species. A summary of forest type acreages discloses that *oak-hickory* occupies fifty-nine percent of the forest area. *Beech-maple* claims twenty-four percent, while *bottomlands* claim sixteen and eight-tenths percent, leaving all others to occupy less than one percent.

Because of past cutting practices and the custom of pasturing woodlands, today's timber stands vary from *all-aged* to *even-aged*. To explain, certain forests which have been carefully managed still contain trees of all ages and sizes from newly germinated seedlings to mature veterans, while other stands that have been carelessly cut and exposed to trampling of cattle or to fires have no very young seedlings surviving. In such groves it often happens that only defective old trees are left, along with sound pole-size trees.

In order to set up measuring sticks for comparing age and size of trees in various forest stands, five age and class sizes have been designated. It was found that 359,254 acres of woodland are chiefly made up of trees less than twenty years old and smaller than four inches in diameter at breast height, or DBH, to use the forester's term. In the next higher class, twenty-one to forty years old and five to nine inches DBH, are 718,978 acres, while 749,296 acres comprise the class forty-one to sixty years and ten to fifteen inches DBH. A fourth class, sixty-one to eighty years and sixteen to nineteen inches DBH, contains 578,334 acres, and the oldest, eighty-one years and up, with trees above twenty inches DBH, boasts 473,017 acres.

It is apparent that about 1,078,262 acres, or nearly thirty-seven percent of these forests, are composed chiefly of trees less than forty years old. Clearly many years must elapse before large volumes of mature timber can be harvested from such stands. Included in this category are many state and federally owned forests, which had their beginnings in farmland abandonment. Older stands are naturally more attrac-

This kind of sawmill is set up in Indiana for the clear cutting job. There, as elsewhere, it is a practice not conducive to the best forestry

Heavy grazing had eliminated young trees when the owner of this Indiana woodlot fenced cattle out in 1931

tive from an operating standpoint, and fortunately these stands make up nearly two-thirds of the state's woodland area. It is an interesting fact that the counties where agriculture is most successful also contain the largest area and per acre volume of mature timber. Prosperous farmers are less given to overcutting their woodlands than are those who frequently find themselves hard up.

The total volume of merchantable sawtimber in this state, meaning trees

Five years later, as graphically shown, young trees had reappeared in great numbers and a future stand was assured

which can be economically harvested, is estimated at 6,175,155,000 board feet. International one-quarter-inch Kerf Log Rule has been used in estimating volume; deductions have been made for defects, so net figures approximate lumber tally which could be sawn from these trees.

commercial value and importance.

Expressed in cubic measure, the estimated volume of the merchantable portions of sawtimber trees is 1,026,411,000 cubic feet, while the total volume of immature trees is believed to be 1,049,928,000 cubic feet. It is estimated that the content of tops and limbs of

This map shows the boundaries of eight units, made up of groups of counties in which forest conditions are uniform

Practically all of this material is concentrated in stands which are chiefly composed of mature trees, less than seven percent being distributed through immature or pole-size stands. Most of the merchantable volume is the *oak-hickory* type, with *beech-maple* ranking second and *bottomland* third. While final species estimates are not yet complete, it is believed that 4,500,000,000 board feet may be regarded as having large trees not counted in the sawtimber figure amounts to 614,516 cubic feet. Thus, the total wood volume is estimated to be 2,690,855,000 cubic feet.

One may ask how the farmers of Indiana came to own so much good timber of merchantable size? The simplest answer is that many hardwood stands were cut sparingly, their owners following a policy of not selling timber until it began to show signs of decay. Yet, as has been noted, a good deal of timber was cut and sawn each year.

Demand for hardwood lumber and other shapes has been so great during the war that utilization practices, here as elsewhere, have been affected. Small and defective trees are now salable, while high grade old growth commands unprecedented prices. For example, beech suitable for airplane veneer stock brought as high as $50 a thousand feet log scale on the stump in 1944! Already there has been gleaning of second growth stands for the larger trees, while owners of virgin woods are becoming increasingly willing to dispose of holdings long withheld from the market.

There are 842 sawmills in the state and 227 other primary conversion plants. Lumber production increased from about 146,000,000 board feet in 1938 to more than 200,000,000 feet in 1941. Since that time production has declined by about fifteen percent. Probably the 1942 lumber cut of 169,640,000 board feet is close to the average for the past four years. Lumber cut, which includes some cross-ties and custom sawing, represents about thirty-four percent of total drain upon the forests.

Cutting of fuelwood and posts represents an even bigger drain, probably fifty-eight percent of all production. Yet most of this material is made from good trees, of sawtimber size. Handle stock, veneer logs and mine timbers are important drains, each adding 10,000,000 or 12,000,000 feet to the yearly total. Fire, insects and disease take an annual toll of more than 21,000,000 board feet. This is eight and a half percent of the total estimated commodity drain, exclusive of firewood.

Altogether, it is estimated that the volume of usable wood removed from Indiana's forests or destroyed by natural causes amounts to the equivalent of 520,223,000 board feet. Such a drain, if continued, might be expected to deplete Indiana's timber resources within two or three decades. This is a serious situation, yet there are favorable considerations to be recognized and acted upon if at all possible. Trees are growing rapidly and in large numbers; in so-called merchantable stands such growth amounts to 274,431,000 board feet each year, and in pole stands 69,841,000 board feet—or a total annual increment of 344,272,000 board feet.

Such a volume of growth may be seriously reduced by progressive removal of the medium size trees, where the best quality wood is now being laid on. On the other hand, growth will continue and increase in the younger stands, even though the added wood may not be available for many years.

Since a considerable portion of current growth is wood of fuel quality, the growth-drain equation is not simply or easily expressed. It may be helpful, however, to point out that at present more high grade sawtimber is being cut than is being replaced by growth, while wood of smaller size and less value is growing nearly as fast as it is being cut or destroyed.

Through better management, growth can be greatly increased. If livestock can be kept out of the woods and if all stands can be harvested conservatively, so as to retain adequate growing stock evenly distributed, it is believed that within a dozen years growth and drain can be made to balance. If present practices are continued, it is estimated that the volume of merchantable timber available in 1955 will have been reduced to less than 3,700,000,000 board feet. A careful study of Indiana's forests brings to view a surprisingly large volume of high grade timber. And even though this resource is gravely threatened by war's mounting attrition and long standing bad management habits, the remedy is apparent and relatively simple to apply.

MAKING APPRAISAL RESULTS KNOWN

The Forest Resource Appraisal is a project of The American Forestry Association. Its purpose is to provide the people of the United States, their industries and state, federal and private agencies with a down-to-date inventory of the country's forest resources after the impact of the war upon them. The appraisal was begun in January 1944 and is being made state by state in cooperation with state departments of forestry and federal and private agencies. The project will be completed by the end of 1946 at which time a body of comprehensive facts regarding forest conditions for the country as a whole will be available.

As the war progresses, a growing number of inquiries are being made as to the plans of the Association in respect to making available appraisal findings. From the beginning of the project the Directors have realized that the value of the results will depend upon the extent to which they are made known and put to use in developing sound and improved policies of forest land management in the postwar period. To this end the Association expects to make the results as widely available as possible and it invites all groups and agencies interested in the conservation of our forests to avail themselves of the final results when they are forthcoming.

Without awaiting the completion of the appraisal, the Association in the meantime is making available state findings when and as determined and will follow with such other activities as shall appear desirable to acquaint people with their state forest problems and to encourage them to act upon them in the light of all facts available. Upon completion of the work in each state, therefore, a preliminary report of appraisal findings is supplied the state forester who may if he deems it advisable request other local representatives of the public and of industry to join with him in considering the facts and formulating state plans and policies of action. Other agencies within the state, particularly those concerned with timber ownership, can with this information formulate intelligent management policies for their own land. In order to make appraisal findings of widest use, the Association stands ready to cooperate either by direct participation or if desired by calling state meetings.

When the over-all survey is finished, the nationwide forest situation in relation to the different states and to the country as a whole will be clear. At that time the Directors of the Association expect to bring together all interested groups to participate in an interpretation of results as found and in the consideration of such action as may be in the best interest of postwar national welfare. In the accomplishment of this purpose the Association expects at the opportune time to call one or more national conferences at which its own recommendations and those of other agencies may be considered and acted upon.

Through these democratic processes the Directors hope that common agreement and concerted action may be reached on the more important forest policies which current facts indicate to be called for in order to meet the country's postwar forest needs.

THE SECOND MILE UP IS FORESTED

By J. L. DEEN

This article previews the findings in Colorado of the Forest Resource Appraisal of The American Forestry Association. Other states will be similarly presented in forthcoming issues.

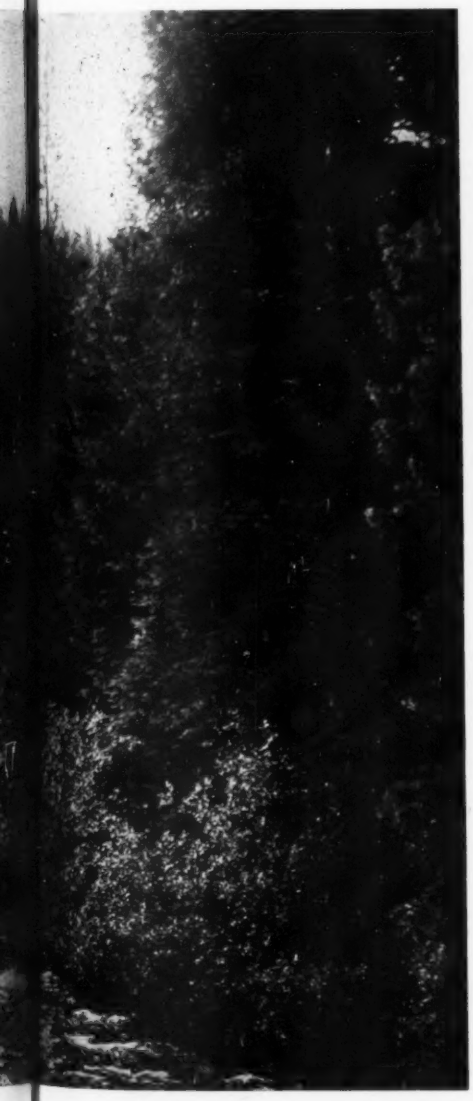
PEOPLE who live in Colorado, and many outsiders as well, agree that this state has everything. Wonderful scenery and pure air of the high mountains, yet a mild climate withal; these are certainly advantages. Because there is water to irrigate its fertile soils and a great abundance of minerals, it has gained importance in both agriculture and industry. And Colorado is a great forested state. Between 5,000 and 10,000 feet elevation, there are no less than 19,000,000 acres of timberland.

In respect to its natural resources, Colorado presents certain interesting contradictions. For example, there is estimated to be within the state 19,000,000,000 board feet of commercial sawtimber, yet the lumber output in 1943 was only 89,000,000 board feet. In the forests the annual excess of growth over drain is around 360,000,000 board feet, with softwoods alone growing nearly

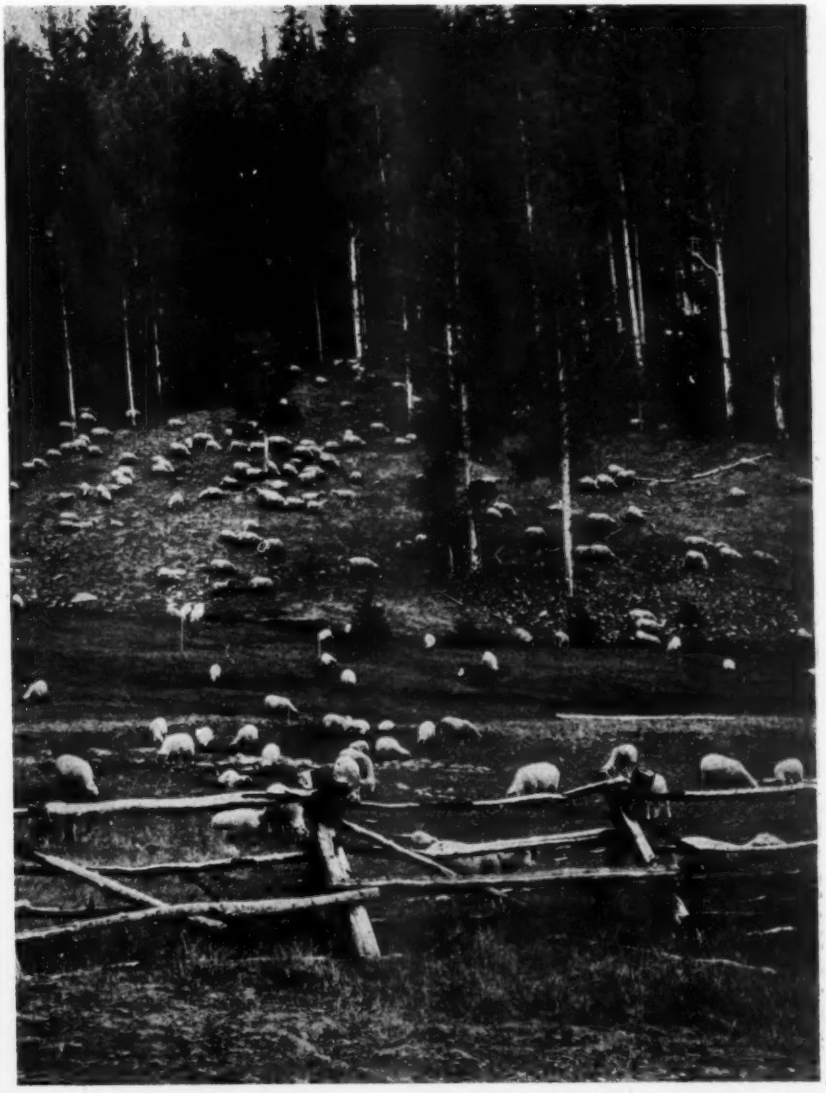
four times as fast as they are being cut.

The eastern one-third of Colorado is level or gently rolling grassland with an average annual rainfall of fifteen inches. Wheat growing and cattle raising are its chief industries, unless and until water shall be brought from the mountains to irrigate the deep and fertile but thirsty soil. In the neighborhood of Denver the prairie, already a mile above sea level, rises into a series of foothills and long east-west valleys. Natural shelter from the northern winds makes these valleys excellent for farming. This is the tension zone between forest and prairie. Cottonwood grows along the stream bottoms; pinon and juniper appear on the hilltops. At 7,000 feet, ponderosa pine occurs in open, park-like stands.

Here is the eastern fringe of the Rockies which runs north and south through the middle of the state in a chain of granite domes 100 miles wide and often three miles above sea level. Colorado is the highest of all states; it has fifty peaks over 14,000 feet. Thirty inches of precipitation falls yearly upon these elevations, making this the principal forest region and chief source of water. No streams flow into the state from outside its borders, yet Colorado is the mother of four large rivers; the Arkansas and Platte in the east, the Colorado and Rio Grande in the west.



Colorado's greatest asset is clear, cool water flowing from the mountain forests to thirsty farmlands below



Mountain-walled plateaus, called "parks," are a feature of the Colorado Rockies. They are of great value for farming and grazing

In the Central Rockies there are mountain-walled plateaus, the flat, alluvial bottoms of which are often two miles above sea level. These are locally called parks and are of great value for farming and grazing. Three such large and many smaller parks occur in this part of Colorado.

To the west of the Continental Divide lies a belt of broken plateaus, steep canyons and jagged peaks bordering on the Great Basin. This region is wealthy in minerals—the country in which Socialite Evalyn Walsh McLean's father "struck it rich." In places orcharding has been outstandingly successful, and always there is the stockman. Generally speaking, the possibilities of farming with irrigation on these western slopes are limited, chiefly because of topography. So it is intended to carry water from these mountain fastnesses to the lush

valleys of the east by tunneling through the mountains, a project which has occasioned no little controversy among conservationists. Nevertheless, it is now on its way.

With such a combination of rugged mountains and dry prairies, water is preeminently important. Colorado has become a great agricultural state by virtue of high quality crops produced on irrigated land. Water rights and irrigation ditches are big factors in property values. Farmers are acutely conscious of the watersheds which support them. They watch the weather reports for snowfall in the mountains, for in that may lie the success or failure of their next year's crop. Their interest in the forest is real; they want it green, uncut and unburned as a sponge to hold the water back until they need it below.

The stockmen are equally interested in the forest, for their own reasons. Their tradition is so strong that even in localities where forestry might give higher returns they, as owners, would not change to production of wood rather than cattle and sheep. Woods work has little appeal where are found some of the best cattle pastures in the world. Some of the bulls they raise are welcomed at the Brown Palace Hotel in Denver, which is more than a lot of people can say nowadays. Even when the forest is not open enough to produce grass, it still offers shelter for stock, and is highly esteemed for its watershed values. No wonder, then, that the mountain forest is dominated by the mountain meadow.

Park-like stands of ponderosa pine, above, and denser lodgepole pine, below, are among the state's most valuable timber types

In the ponderosa pine type at lower elevations there is conflict in land use between stock farming and forestry. About half of the 2,500,000 acres of this type is in private ownership, most of it heavily grazed. When cleared, such land tends to restock with scrub oak, which in moderation has value as shade, since it prevents drying out of the soil and permits growth of better grass. Whether it is better to keep this land for pasture or try to get it back under timber is a point as yet undecided. Certainly tree planting would be difficult to justify, and yet that is about the only way a commercial forest can be reestablished. An experimental area of 5,000 acres near Fort Lewis in southwestern Colorado has been designated by the Colorado A & M College for study of this problem.

Another interesting area is the Black Forest, southeast of Denver. One looks down upon it from Pike's Peak. It is in certain ways unique. Described as the only natural forest in the plains country, it tends to remain forest, failing nearly always to produce good grass after clearing. The rainfall here approaches twenty inches, which means that this is a suitable forest site and probably much of it should be devoted to such continuing use.

The tourist business, which brings thousands of visitors to Colorado every year, leans upon the magnificence of the scenery as well as upon the excellence of the climate. Dude ranchers, hotel keepers, and all the other people who serve these travelers are interested in maintaining the forest undamaged, as one of the chief elements in this scenic resource.

Another great industry of the state is mining. It brought the first settlers and was responsible for an enormous number of forest fires. Incidentally, it consumed a great deal of wood in the mines. Leadville is a famous place, the home of Baby Doe and the non-sinkable Mrs. Brown. It is said that if all the mine timbers which have been used at Lead-

ville could have been sawn into boards and dimensions, there would have been lumber enough to build a city the size of San Francisco.

As to forest fires, it should be noted that the attitude of the miners has changed from carelessness to one of interest in protecting their sources of mine props. Cattlemen similarly hate forest fires, not because they destroy saleable timber, but because they burn hay and damage the watersheds. Farmers, stock raisers and miners alike are indifferent to the forests as a source of logs for sawmill operators, yet strong for keeping fires out.

So far, mention has been made chiefly of ponderosa pine, a species which occurs at the lower elevations. Higher up this pine gives way to Engelmann spruce, lodgepole pine, and Douglasfir, which are found all the way to timberline, at 10,000 feet elevation or thereabouts. Of such forests the federal government controls more than 8,000,000 acres in fourteen national forests. National parks account for 622,789 acres more. Another 1,000,000 acres are in private hands. Small trees, slow growth, and rough terrain characterize this Central Rocky Mountain woodland. Upon the average acre there grows from 80 to 100 board feet each year. Eighty years are normally required to produce a railway tie, and 125 years for a small sawlog.

After fire, the chief enemy of these forests is a bark beetle (*dendroctonus englemanni*) which has reduced the stand of Englemann spruce by at least 2,000,000,000 board feet. This infestation has built up gradually, probably having been given its early impetus by a destructive blow-down back in 1939. Yet most of the loss has occurred during the last two years.

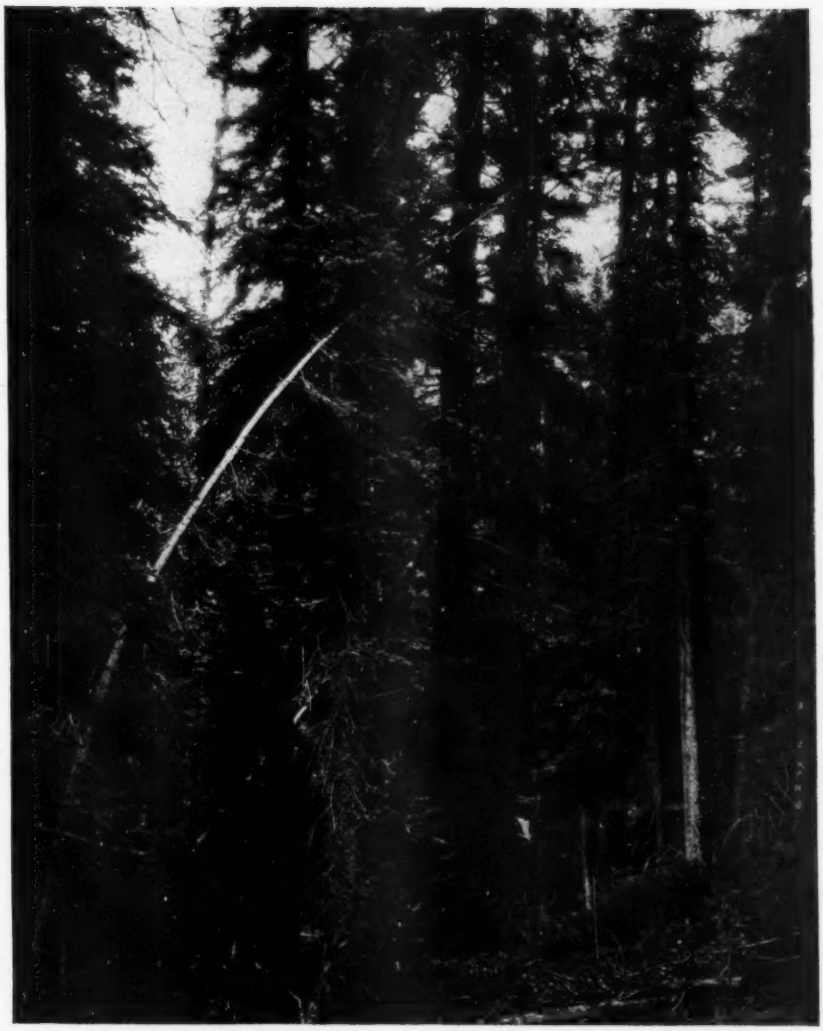
Owning the greater portion of the threatened timber, Uncle Sam naturally is the principal loser. Because of severe cold and heavy snows, small size of trees and low timber value, the possibilities of arresting such attacks by the usual insect control measures have appeared poor indeed. Yet on two national forests experimental control projects are under way. And strangely enough, it has been found that this particular beetle has a predilection for hibernating, as an adult, in the bark at the base of trees from which it has recently emerged. Thus it may be possible to destroy vast numbers of dormant adult beetles by spraying during winter with DDT, the potent new insecticide.

Probably it is not surprising that Colorado has developed no large wood-using industries and that so many of her forests are publicly owned. Early timber-looking lumbermen (see "Sampling America's Forest Wealth," December 1944, issue) passed them by in favor of those farther south and west. Yet the citizens of Colorado were among the first westerners to realize the necessity of protecting forests in the interests of agriculture. As early as 1876, public opinion demanded that forest fires be stopped. In the state's first constitution, adopted that year, the General Assembly was directed to make laws for the purpose of protecting forests. At the same time, a memorial was addressed to the Congress of the United States dealing with this subject.

In 1891, the setting aside of forest reserves was begun by President Benjamin Harrison. Although opposition to the federal reserves was widespread, the benefits soon gained recognition in certain quarters, and in 1916 Colorado asked and got an addition of 500,000 acres to the Colorado and Pike National Forests. It should not be assumed that such approbation was universal, for, according to local historians, that was the year irate stockmen tied Forest Supervisor Bill Kreutzer to a tree. Eventually the public came to believe that the present national forest area, which stands at around 14,000,000 acres, is just about right. A change in either direction would surely meet local opposition.

Public opinion today apparently prefers that problem areas in need of public support should be put into state rather than national forests. The state forest area now amounts to 154,000 acres, and it is hoped to add to this for management the residue of grant lands amounting to a considerable acreage. City forests for the protection of water supply are also locally favored. That of Boulder now contains more than 6,000 acres.

(*Turn to page* 308)



Dense stands of Engelmann spruce and alpine fir are an important component of Colorado's forests. This scene is in a national forest

SCHOOL IN THE SWAMP

By MARJORIE B. ARBOUR

LOUISIANA swamp lands have become classrooms. Around the coastal waters of Lake Salvador and Barataria Bay, rich in tradition of the pirate Lafitte, the children of trappers put aside their books for a brief period last year to learn more about the ways of muskrats, oysters, shrimps and crabs, the "big four" in swamp money-makers. Their instructors were experts of the State Department of Conservation.

These youngsters, of course, were to a degree already swamp-wise. They knew it was profitable to spend most of December, January and February trapping muskrats in the reedy lands bordering the bayous. They knew that oysters, shrimps and crabs were valuable swamp products. But they did not know that by better management, by the application of new ideas and methods, the swamps could be made to contribute more to their lives.

The Department of Conservation had, for a number of years, attempted without success to convince the children's parents of this. But older trapper-folk are apathetic to new ideas. Seasoned old-timers continued to trap muskrat and harvest oysters and shrimps according to methods handed down to them. So the department decided to work through the youngsters who soon will have a part in the family swamp harvest.

The first class was made up of members of the 4-H clubs of St. Charles Parish. Provided boats, instructors and chaperones, these boys and girls followed old bayou pirate trails, learning at first hand some of the answers to better swamp management. They were told, for example, that trappers could burn over muskrat lands in autumn so that dead vegetation might be destroyed and the muskrats get needed food without returning to the inner swamps.

Pelts—and the swamps of Louisiana produce 5,000,000 a year, half of all muskrat pelts taken in the country—are not the only marketable part of this swamp rodent. For a number of years it has been sold on the market for edible purposes under the gastronomically more pleasing name of "marsh hare."

After their lessons in muskrat management, the children cruised to where

Traveling along old bayou pirate trails, these youngsters learned at first hand some of the answers to better swamp management. Here they visit a muskrat trapper's hut

oyster farmers were "tonging" on the reefs in Barataria Bay. Oysters are quick-growing in Louisiana. They reach maturity in from eighteen months to two years, whereas in northern waters from three to five years are required. Therefore, swamp waters produce two crops to one in the cold-water regions. The state's oyster crop is valued at $2,000,000 and supports 8,000 persons.

At Manila, a village of Filipino and Chinese workers, the children landed on the spot where shrimp were first sun-dried. Shrimps were spread out on large, wooden platforms, and the children saw, in their home state, one of the great fisheries of the world. They were told that coastal waters, fed by the Mississippi, are ideal for shrimp—that there is nothing comparable to the region or the product this side of the Indian Ocean. Lake shrimp spawned offshore in late March may reach inshore waters by early April.

The children had a side trip to Bird Island where hundreds of egrets, white cranes and herons were preening themselves in the rookeries.

The lesson here—how to improve the swamp oyster "crop" and, at left, how oysters are taken

The next stop was on an island home off Barataria Bay. The host's year 'round business depended on choosing the right minute when crabs are shedding naturally. Only at such times, they were told, is it possible to obtain a prize catch. The crab usually comes into brackish water to mate and then migrates seaward. The eggs, after fourteen days, hatch into strange little creatures which finally assume adult form. When they are about three months old, catchers begin to take them.

The boys and girls learned much during the trip. Intensive schooling in muskrat marshes, bird feeding grounds and oyster and crab beds gave them a picture of the product of their reeds, marshes and shell banks as a part of the nation's business.

The windup of their trip was a picnic in Laffitte. The last class was one featuring personal contact with the pirate waters—"Walk the plank, Shorty, in you go!" The swamp children were in their element, swimming about in Louisiana waters.

Part of the beauty of the swamp is in its ancient moss-draped oaks

ALLIGATOR JUNIPER

***Juniperus pachyphloea*, Torrey**

By G. H. COLLINGWOOD

ALLIGATOR JUNIPER differs from the ten or more other species of *Juniperus* native to North America in having a thick bark divided into scaly squares, like the hide of an alligator; juvenile awl-shaped leaves, usually in whorls of three, while the scale-like mature leaves are usually in pairs; and dark red-brown berries frequently marked with short tips of the flower scales, about half an inch in diameter, and usually including four seeds.

It is a low tree, seldom more than fifty or sixty feet high, whose irregular round crown is supported by a short trunk three to five feet in diameter. Whether growing in pure stands or as more frequently with nut pine, Emory oak, and Arizona desert oak, the trees are usually separated as in an orchard. Individual trees become weird and distorted as they cling to canyon sides or struggle like gnomes along the contours of barren plateaus. Highly resistant to drought, these junipers grow in dry, sterile, rocky soils from 4,000 to 6,000 feet above sea level in the region extending from the mountains of southwestern Texas, across southern New Mexico, southern Arizona, into northern Mexico.

Seldom more than fifty feet high, the alligator juniper has a short trunk, irregularly rounded crown and stout branches

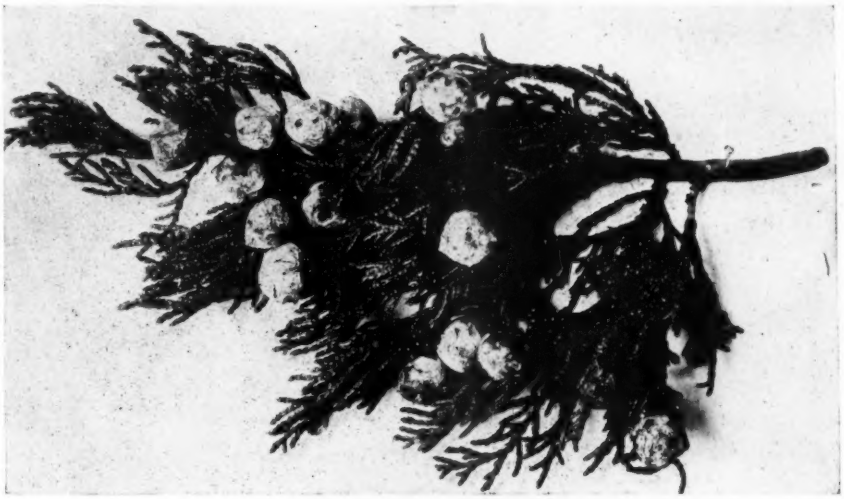
Trees of the genus *Juniperus* are found throughout the entire Northern Hemisphere and below the Equator in North Africa. It is perhaps the most widely distributed of all conifers. The name traces to the Latin words *juvenis*, meaning young, and *parere*, meaning to produce. Presumably, the name refers to the two types of leaves produced on each tree—awl-shaped, needle-like young leaves the points of which stand out, and mature leaves which are scale-like and pressed close to the stem.

The French know the tree as "genièvre," from which are derived the words "Geneva" and "gin." The alcoholic beverage, gin, was originally flavored with a decoction from the berries, while unripe berries are a source of oil of juniper, which is a diuric used in medicine.

Young leaves of alligator juniper are usually in threes, while the mature, scale-like ones are in pairs or occasionally in threes, and scarcely one-eighth of an inch long. The twigs on

which the scale-like leaves lay pressed are slender, four-angled and pale blue-green like the leaves. With age the leaves are replaced with thin, smooth, red-brown bark occasionally broken into larger thin scales.

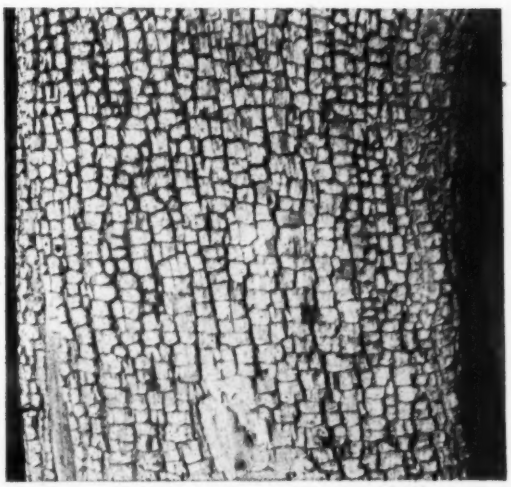
The flowers are inconspicuous, being only about one-eighth of an inch long, and opening in February and March. The stamens and pistils are in separate flowers, but both sexes grow on the same tree.



The compact foliage is pale blue-green—the berry-like fruit rusty-red, pulpy cones about one half of an inch in diameter

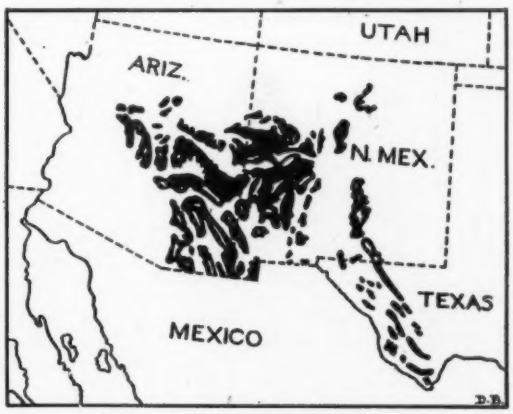
The berry-like fruit is a true cone formed by the coalescence of the flower scales to form a rusty-red pulpy globular mass about half an inch in diameter, covered with a bloomy skin whose dry, mealy flesh contains four seeds. The Southwestern Indians grind the berries into a meal from which they prepare a sunbaked cake reported to be resinous in taste, but not too unpalatable. Each thick shelled seed is markedly swollen at the back and has two lobed scars at the base. Birds eat the berries and scatter the undigested seeds which germinate in two or three years.

The deeply fissured, dark red-brown bark is a scant one to four inches thick with mosaic-like patterns of square, flat-topped plates, one to two inches across. They suggest the hide of an alligator, and also account for such names as checker-barked juniper and oak-barked cedar. The specific name *pachyphloea* is derived from two Greek words meaning thick bark.



Dark red-brown bark is fissured with patterns of square, flat-topped plates

Like all junipers, the soft, brittle wood of alligator juniper is durable in contact with the soil. It is close-grained, clear light yellow often streaked with red, and aromatic. The nearly white sapwood is thin. Alligator juniper wood has a dry weight of thirty-six pounds a cubic foot, which is heavier than that commercially used for pencil stock. Were many trunks sufficiently long to produce satisfactory logs or bolts, it would be useful as pencil slats or for furniture. Actually, its relative scarcity and inaccessibility deprive the wood of commercial uses other than for local fuel and fence posts. It contributes to protect areas from wind and erosion, for it grows where few other trees will grow. Nevertheless, few successful efforts have been made to reproduce it by planting.



Natural range of Alligator Juniper

Tree Trails . . .

A NEW champion has been discovered in the Wisconsin woods—a mighty white pine, larger in circumference by fully two feet than any previously on record with The American Forestry Association.

This tree was reported to the Milwaukee *Journal* on March 20, by Hugh D. Bennett, to whose attention it had been brought by U. S. Forest Ranger Louis Tauch; and a few days later was officially nominated as a "Big Tree" by Jacque Vallier of Milwaukee.

The MacArthur White Pine, as it has been named by Mr. Bennett in honor of a great soldier, stands in a grove of birch, hemlock and spruce two miles south of the Popple River not far from the town of Newald in Forest County. Although within the boundaries of the Nicolet National Forest, the tree grows on State Land Commission land.

After some controversy as to size entailed by measuring in the deep snow, the certified figures of Ranger Tauch and District Forester James Hovind of the State Conservation Department, were accepted. The circumference four and a half feet above the ground is given as sixteen feet, eight inches, the total height as 140 feet, the live crown as eighty-five feet, and the maximum crown spread as forty-eight feet. The volume is estimated at 8,000 board feet and the age at over 400 years.

This magnificent tree is in good health and will, it is hoped, live for many years to come.

The General MacArthur White Pine

WARTIME FOREST-FARMER

By ARTHUR H. CHRISTIE

FARMER Leon Atwood is practicing farm forestry in his woodlot at Valcour, New York. At the same time he is contributing wood products to the war effort —wood for ships, planes, boxes and paper. In harvesting this war crop from his woodlot, Mr. Atwood is following a selective cutting program directed by a farm forester of the United States Forest Service.

Mr. Atwood at present owns two farms in Clinton County totalling 975 acres—120 in apple orchards, 225 in dairy and crop lands, and 630 acres in woods. The orchards produce the famous select New York MacIntosh variety of apple, always in great demand. The dairy is made up of 140 registered pure-bred Ayrshires of the Red Star strain. To manage and operate these two farms, Mr. Atwood employs eleven men the year round, with extra day labor during planting and apple picking seasons. These year-long employees are the backbone of the woods crew working during the winter months in his woodlots.

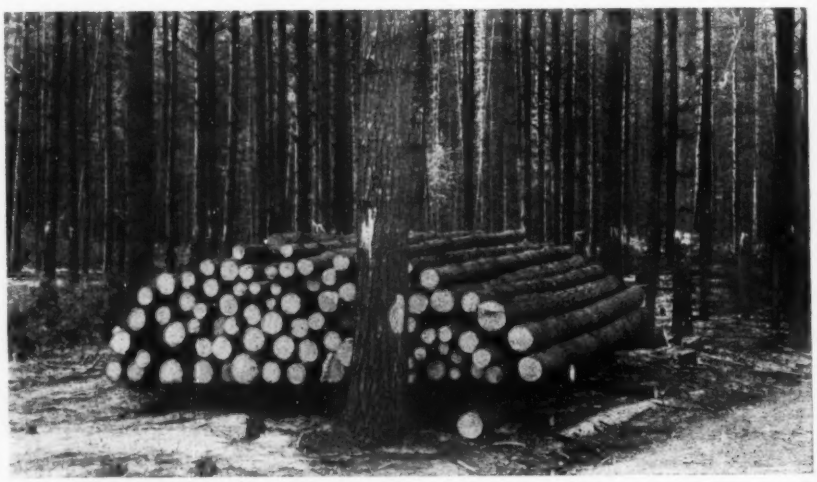
Long a leader in various northern New York farm groups, Leon Atwood also is a director of the GLF Forest Products Cooperative at Crown Point, where he spent considerable time and effort in helping to establish a wood using plant. This mill with its box shop has provided a good market for native farmer cut logs and supplied cheap apple boxes for farmers all over New York State.

The story of Leon Atwood starts in 1921 when he bought his first farm and set about to build it up through methods which would insure the land producing its maximum over a long period. It is this desire that later stimulated his interest in forestry. Believing that any well operated farm must have a productive woodlot, he called in a farm forester for help and advice.

During their first talk, the farm and the woodlot were discussed and general plans developed. In checking over the farm program it was found that during the early winter months extra man-days were available for woodlot work. Also, that several local farmers could be hired for woods work. A woodlot survey revealed considerable mature timber which could be harvested to the mutual advantage of the woodlot owner and local sawmills which had war contracts for munitions mills, having war contracts for munitions crate stock. The farm-forester made a further woodlot inspection to check on volume, growth, timber types, soils and other technical details for sound cutting plans.

The Atwood woodlots vary in mixtures from pure white pine through white, red and pitch pine, into hemlock-hardwood-white pine mixtures. The ages of the timber vary from twenty to 150 years, soils ranging from Plainfield sands to Dover loams. Growth records made on selected trees showed rates varying from one-half to three-quarters inches in diameter a year, with the general average about one-half inch. Old stumps showed that the original virgin timber was cut in about 1850, after

(*Turn to page* 312)



On Unit No. 3, pitch pine was marked for cutting (above)—the red and white pines left as crop trees. Below, the harvest—mine props

THE KELLETT XR-8 HELICOPTER

Just released by the Army Air Forces, this photograph illustrates a new product whose evolution toward important peace-time achievements has been stimulated by the urgency of war.

The XR-8 is the first American helicopter successfully tested in flight to embody the principle of an *intermeshing twin set* of rotor blades. Structural vibration, long an obstacle to progress in rotary-winged craft, is largely removed. Many related problems have been solved. The need for long power-transmission shafts is eliminated. Weight and drag are saved, increasing pay-load.

Its whirling "egg-beater" vanes enable the XR-8 to fly forward, backward or sidewise with unusual efficiency. Like a hummingbird, it can hover motionless in the sky, or only a few feet above ground. Its vertical take-off and descent permit operation to or from any space that gives safe clearance to the sweep of its own blades.

With sixteen years of design and engineering experience in autogiro and helicopter development, the Kellett organization believes that helicopters will perform a wide range of useful jobs in the new air world of tomorrow.

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CONSERVATION IN CONGRESS

THE Agricultural Appropriation bill for the fiscal year beginning July 1, as it was finally passed by both Houses of Congress and approved on May 3 by the President, provides some substantial increases for the forestry work of the Department of Agriculture. These are mainly for the activities of the Forest Service whose total appropriation for next year is increased by more than $5,500,000. The activities mainly benefiting from this over-all increase are national forest protection and management, timber sales, grazing administration, land use management, cooperation with the states in forest fire prevention, research in forest and range management and investigations in forest utilization.

A breakdown of forestry appropriations for the Department, according to activities and comparing 1946 funds with those of 1945, is given in the table below.

An increase of special interest is that of $1,000,000 for federal, state and private cooperation under the Clarke-McNary Act in fire prevention. The total amount appropriated for this work, it will be noted, is $7,300,000, the full amount for the fiscal year 1946 as authorized by the act recently amended by Congress.

The Forest Products Laboratory at Madison, Wisconsin, receives an increase of $227,520, bringing its total funds up to $1,228,900. This is part of an increase for the forest research work of the Service of over $500,000 made by the Senate when the bill was before it. The other increases provide $349,000 for management investigations, including watersheds, strip mining and silvicultural studies, and $12,500 for range investigations.

In making appropriations for the new fiscal year Congress departed from the procedure of last year whereby overtime pay was included. Appropriations for 1946 do not provide for overtime pay and in comparing them with 1945 items as given in the accompanying table, the latter figures also eliminate overtime expenditures. The new policy of Congress is to pass a separate bill to cover estimated overtime costs.

DEPARTMENT OF AGRICULTURE APPROPRIATIONS BILL
(Overtime Not Included)

	1946	*1945*
Forest Service (Total)	$36,807,044	$31,115,028
General Administration	542,000	542,275
National Forests Protection and Management	16,649,100	15,774,286
General Management	5,281,399	5,281,399
Maintenance of Structures	1,000,000	918,479
Fire Control	5,545,180	5,545,180
Forest Insect Control	95,674	95,674
Timber Sales	2,799,035	2,467,749
Grazing Administration	550,000	431,236
Wildlife Protection	87,634	87,634
Policing Camp Grounds	175,000	131,757
Land-Use Management	661,786	461,786
Water-Use Management	32,572	32,572
Improvement Constructions	76,566	76,566
Planting	344,254	244,254
Fighting Forest Fires	100,000	100,000
Land Acquisition	.....	64,150
Roads and Trails (10% fund)	1,557,000	990,262
Forest Roads and Trails	5,918,778	3,619,106
White Pine Blister Rust	1,266,066	1,040,320
Cooperation With States (Total)	8,032,500	6,997,657
Fire Suppression (Clarke-McNary)	7,300,000	6,265,120
Farm and Private Forestry	732,500	732,537
Research (Total)	2,741,600	1,986,972
Forest Management	970,900	520,992
Range Investigations	337,500	250,000
Forest Products	1,228,900	1,001,380
Forest Resources	204,600	214,600
Bur. of Entomology and Plant Quarantine (Total)	2,531,301	1,712,322
Gypsy and Browntail Moth Control	359,800	359,835
Dutch Elm Disease	252,000	252,000
Forest Insects	261,700	216,940
Blister Rust (Department of Interior Lands)	259,838	170,747
Blister Rust (Private Lands)	1,397,963	712,800
Bureau of Plant Industry		
Forest Diseases	232,700	232,700
Soil Conservation Service (Total)	29,699,800	25,438,500
National Arboretum	26,800	26,800

CONSERVATION CALENDAR

Important Bills in Congress With Action April 17-May 9

Bills Enacted

H. R. 1984—Making appropriations for the executive office and sundry independent executive bureaus, boards, commissions, and offices, for the fiscal year ending June 30, 1946, and for other purposes. Signed by the Speaker on April 30. Signed by the President on May 3. Public Law No. 49.

H. R. 2374—CANNON—First Deficiency 1945. Making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1945, and for prior fiscal years, to provide supplemental appropriations for the fiscal years ending June 30, 1945, and June 30, 1946. Signed by Speaker on April 23. Signed by President on May 3. Public Law No. 40.

H. R. 2689—TARVER—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1946. Signed by Speaker on May 3. Signed by President on May 5. Public Law No. 52.

Appropriations

H. R. 3024—JOHNSON—A bill making appropriations for the Department of the Interior for the fiscal year ending June 30, 1946, and for other purposes. Introduced and referred to the Committee of the Whole House on the state of the Union and ordered to be printed on April 24. Reported by Committee with amendments on April 27. Passed by the House on April 29. Sent to the Senate on April 30 and referred to the Committee on Appropriations.

Research

S. 893—BREWSTER—A bill to provide for establishing and maintaining region-

al forest products laboratories in the northeastern, northwestern, southwestern and southeastern regions of the United States, and for other purposes. Introduced and referred to the Committee on Agriculture and Forestry on April 18.

S. 383—BANKHEAD—Reported from committee without amendments (Report No. 198). Passed by Senate on April 27.

H. R. 1690—FLANNAGAN—To provide for the further development of cooperative agricultural extension work. Reported from Committee with amendments on May 1. (Report No. 498.)

Water and Stream Control

S. 555 — MURRAY — (H. R. 2203 — COCHRAN)—To establish a Missouri Valley Authority to provide for unified water control and resource development on the Missouri River and surrounding region in the interest of the control and prevention of floods, the promotion of navigation and reclamation of the public lands, the promotion of family-type farming, the development of the recreational possibilities and the promotion of the general welfare of the area, the strengthening of the national defense, and for other purposes. Reported unfavorably on May 7. (Report No. 246.) Referred to Committee on Irrigation and Reclamation on May 7.

H. R. 2923—HORAN—A bill to establish a Columbia Valley Cooperative Authority, and for other purposes. Introduced and referred to the Committee on Rivers and Harbors on April 17.

H. R. 2981—BARRETT—A bill to authorize the construction of certain federal reclamation works in the upper basin of the Colorado River. Introduced and referred to the Committee on Irrigation and Reclamation on April 23.

S. 894—O'MAHONEY—A bill to authorize the construction of certain federal reclamation works in the upper basin of the Colorado River. Introduced and referred to the Committee on Irrigation and Reclamation on April 18.

Fish and Wildlife

S. 924—CORDON—A bill to amend the act of March 10, 1934, entitled "An act to promote the conservation of wildlife, fish and game, and for other purposes." Introduced and referred to the Special Committee on Conservation of Wildlife Resources on April 24.

H. R. 2297—An act to provide for the conservation of fish and wildlife on the Klamath Reservation in Oregon, and for other purposes. Introduced on April 17. Passed by House and referred to Senate on April 18.

National Forests

S. 913—HAYDEN—A bill to protect scenic values along and tributary to the Catalina Highway within the Coronado National Forest, Arizona. Introduced and referred to the Committee on Public Lands and Surveys on April 23.

H. R. 3040—HARLESS—A bill to protect scenic values along and tributary to the Catalina Highway within the Coronado National Forest, Arizona. Introduced and referred to the Committee on Agriculture on April 25.

National Seashores

H. R. 3028 — BONNER — A bill to amend the act of August 17, 1937, as amended, relating to the establishment of the Cape Hatteras National Seashore Recreational Area in the State of North Carolina. Introduced and referred to the Committee on the Public Lands on April 24.

Miscellaneous

S. 923—MCCARRAN—A bill to create a Natural Resources Board and for other purposes. Introduced and referred to the Committee on Public Lands and Surveys on April 24.

H. J. Res. 145—JOHNSON—Providing for membership of the United States in the Food and Agriculture Organization of the United Nations. Passed by House on April 30. Sent to Senate and referred to Committee on Foreign Relations on May 3.

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LARGE STOCK SUPERIOR QUALITY.

MOUNT ARBOR NURSERIES

GROWERS OF A COMPLETE LINE OF GENERAL NURSERY STOCK.

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H. S. WELCH, VICE PRESIDENT
R. M. GWYNN, SECY-TREAS.
F. W. WELCH, SUPERINTENDENT

Shenandoah, Iowa
October 6th, 1944.

Mr. H. Seaman, President,
Seaman Tiller Division,
Seaman Motors,
322 No. 25th St.,
Milwaukee 3, Wisconsin.

Dear Mr. Seaman:-

We are very well satisfied with our first Season's experience with your six foot Motorized Seaman Triple Tiller. As the operation of the Tiller, and the results being obtained, have been under very close observation all Season, we are now able to confirm your claims from our own experience.

By using your Tiller, we prepare better seed beds with one-fourth the hand labor formerly required. Proper soil preparation is now completed in minutes rather than hours. Soil can now be worked shortly after heavy rains. Fertilizer, send etc., can now be evenly worked into the soil. Clods are pulverized above and below the surface so that all air spaces are permanently eliminated. The prepared soil is in prime condition for rapid economical planting of seeds or plants.

This perfect soil preparation is reflected in better stands and better plant root systems - finer quality, better value, and greater net profits. This is not just my opinion, but it is proven by our experience this Season.

Your Tiller is an important factor in our long range program to maintain and improve the quality of our stock by soil conservation and soil rebuilding.

Cordially yours,

MOUNT ARBOR NURSERIES,

BY *Joseph A. Abrahamson*

Joseph A. Abrahamson,
Farms Manager.

CCL/LS

"... we prepare better seed beds with one-fourth the hand labor formerly required"

MOUNT ARBOR NURSERIES of Shenandoah, Iowa, — the world's largest nursery, — in their seventy outstandingly successful years have kept constantly alert to new methods, — new techniques to improve the quality of their stock. That's why they've been so successful . . . and that's why their soil preparation is handled by the SEAMAN TILLER.

This letter from Mr. Joseph A. Abrahamson, Farms Manager for Mount Arbor Nurseries, tells the story of the SEAMAN TILLER far better than words of ours . . . You, too can reap the benefits in labor saving, in better stands and in better seed-beds that the SEAMAN TILLER brings about. Full information is yours for the asking.

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SEAMAN TILLER

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12,000,000 Acres

(*From page* 266)

pie before the baron, these people still hated to see a fancy-dandy come in and pre-empt their land. Legality lost force before moral concepts, in their minds. Upshot was the creation by Congress of a special Court of Private Land Claims, with the express purpose of reviewing Don James' case and all others in dispute.

"By all means let us have such a court," the baron grandiloquently said. "I hear the rumors of discontent. I want my people to be happy. Let this new court review my records. Let certified copies again be brought from the monasteries abroad, showing the line of consanguinity, the true inheritance whereby my wife and I own the barony."

The Spanish government, feeling sympathy for this beleaguered baron in America, went a step farther. To help him, it offered to send not certified copies but the *original* documents themselves. These could be taken from the monastery vaults, sealed and sent to America under special guard, then after official inspection by our new court they could be returned to their places. Mexico chimed in with a similar offer.

"That's the very thing to do!" Don James agreed again. "Then the matter will be forever settled in all people's minds."

And, after due diplomatic arrangements, it was done. The original papers, dating back many decades, yellowed with time and written in the quaint idiom of the early Spanish court, were sealed and brought to Arizona. They were locked in a steel vault, in charge of a United States judge and a special marshal. They were, in truth, quite bulky, for economy of words in the old days was not a court consideration in Spain. Every detail of the inheritance was given, even to the complete names of all the ancestors and relatives who might be even remotely involved, plus a physical description of them.

The very first Baron of Arizona—he to whom the Spanish king originally made the land grant—was named Don Miguel, and his title was a simple "Baron de Arizonac and Caballero de los Colorados, Gentleman of the King's Chamber with privilege to enter at will, Grandee of Spain, Knight of the Military Order of the Golden Fleece and of the Montesa, Knight of the Royal Order of Carlos III, Knight of the Insignia of the Royal College of Our Lady of Guadalupe." He was, the old document further said, "the legitimate son of Don José Gaston Gomez de Silva y Montez

de Oca de la Cerda y de Carillo de Peralta de las Falces de la Vega (his father) and of Doña Francisca Ana Maria Garcia de la Cordoba y Muñiz de Perez, who were married in the year 1686."

Thus in detail were all the ancestors described, with dates of births, deaths, marriages of all children right on down to Don James' present wife in Arizona, Doña Sofia Loreto. The total of the documents from the monasteries was in excess of 80,000 words—more than the average novel of today. But that still wasn't all; by rare good fortune Don James, the present baron, had been able to locate pictures of most of those ancestors, some priceless miniatures, some oil paintings, some faded and wrinkled of course, but good enough to proclaim the obvious aristocracy of the clan. These family portraits were prized in the baron's Arizona home.

Great interest, therefore, attached to the court showing of these documents from Spain and Mexico. Any family with so distinguished a background, and that had established so extraordinary a claim in America, was bound to command interest. The court duly convened, the hearing was given in detail, the sealed records from abroad inspected and translated—and *once more the baron's claims were substantiated!* His barony was all that he said it was. The new court affirmed it. The citizens were flattened once more, without a chance for appeal or other comeback. La Baronia de Arizonac apparently was established in our nation for the remainder of time.

Don James, well poised and happy, threw a big party to celebrate, and began anew to ingratiate himself into people's admiration. Also—he let contracts for two great sawmills to work his forest land. Along with irrigation, ranching and mining, he knew that milling would be essential—and profitable. He was a builder. He was a great man!

The documents did not go back to Mexico and Spain immediately after court adjourned, however. They had to wait for the guards to connect with a specific train and boat, so they were kept in the steel vault at Phoenix. Down at Florence, Arizona, a farm town, lived a quiet-mannered printer named Thomas Weedin. Tom had a hobby of studying old type faces, old letters, old documents of any kind. Just a printer's hobby, for recreation and fun. Tom stuttered a little, and that made him unduly shy, but he screwed up nerve enough to go to the United States judge that week.

"J-Judge, your Honor," Tom said, humbly, "i-i-if it ain't asking too m-much, I'd sure like to see them old

(*Turn to page* 305)

FEED YOUR SHADE TREES

By L. C. CHADWICK
Associate Professor of Horticulture, Ohio State University

IN the April issue I discussed at length the problems of transplanting shade or ornamental trees. The next phase is maintenance, the most important operations of which are fertilization, pruning, spraying for insects and disease control, cabling and cavity work.

Among the important points to consider in fertilization are the season or seasons of operation, the fertilizer formula to be used, the amount of fertilizer to apply, and the method of application. Although spring has been a general period of applying fertilizers, recent experimental work indicates that fall is just as favorable if not a more favorable period. Investigators point out that root activity continues until relatively late in the fall. They have shown considerable root activity occurring at forty to fifty degrees Fahrenheit—and a maximum growth taking place at sixty-five to sixty-nine degrees.

Since root growth does not proceed at least until late fall or early winter, if other factors are favorable, the fertilizer materials will be absorbed to a considerable extent soon after application. Furthermore, if they are applied correctly, there is little likelihood of stimulating top growth. The fall applications are best made after the autumn rains have amply moistened the soil. In the midwest section of the country, tests have shown that from October 1 to 15 is a favorable time. Where means of artificial watering are available, most hardy trees can be fertilized any time during the summer months.

It is doubtful if any one type of fertilizer is the best for all shade trees. Ordinarily I would like a fertilizer that is high in nitrogen and containing enough phosphorus and potash to make at least twenty units. This would mean a fertilizer with an analysis similar to a 10-6-4. During the pre-war days, I specified that from twenty-five to thirty percent of the nitrogen should be from an organic source, such as cottonseed or soy bean meal.

The rate of fertilizer application will depend upon the size of the tree and the condition under which the tree is growing. Under normal conditions, with an unrestricted root system, small trees, for example those under six inches in diameter, should be given approximately two to two and a half pounds of the complete 10-6-4 fertilizer for each inch in trunk diameter. For large trees, eight to ten inches or over, the application can be increased from four to five pounds an inch. Applications at this rate can be made every year to once in every three years, depending upon the kind of tree and the growth response.

Methods of applying fertilizer include surface broadcasting, punchbar or auger hole application, aero-fertil and hydro-fertilization. The punchbar or auger hole method is perhaps most commonly used and will be the only one discussed here. The fertilizer should be applied in holes distributed evenly beneath the spread of the branches, and for at least a short distance beyond the branch spread. I would like to recommend that the holes be placed every foot apart throughout this area. A somewhat further spacing, however, should be satisfactory. The holes should be made fifteen to eighteen inches deep with a soil auger or crowbar. A soil auger is preferred. The fertilizer, used alone or mixed with compost soil or organic matter, is divided evenly among the holes. In most cases, it is advisable to set a sprinkler underneath the trees after the fertilizer has been applied and to let it run for some hours.

Pruning, the removal of dead

branches and occasional thinning out of crowded branches, can be done at almost any time during the year, but one of the most favorable seasons is during February and March. The cut should be made clean and close to the adjoining branch or trunk. Where large branches are removed, it is advisable to make a double cut to prevent the bark from tearing or stripping. Any wounds over an inch in diameter should be painted with an asphalt base paint.

Spraying for the control of insects and diseases is a necessary and important tree maintenance practice, though no attempt will be made here to recommend control measures for individual types of insects and diseases. May it suffice to say that there is no cure-all for all insects and diseases. Know what you are spraying for and what materials are being used. Don't be mislead by fly-by-night operators or gyp-artists. If you have trouble with insects or diseases on your shade trees, consult your state experiment station or university or a qualified arborist.

Cabling the branches of trees together is an operation now practiced extensively by commercial arborists. Proper cabling will go a long way to prevent the splitting of limbs and the destruction of whole trees under conditions of heavy winds, sleet, or snow storms.

Many cavities can be prevented by maintaining the proper health of the tree through fertilization, spraying and proper pruning. Before any cavity work is done, it would be wise to ascertain if the trees to be treated are worth the cost involved.

The production and maintenance of healthy ornamental shade trees is not altogether an easy proposition. However, if the correct varieties of trees are chosen, if they are properly planted, and if such maintenance practices as mentioned above are carried out satisfactorily, good shade trees should be the reward.

To Fight Blister Rust

Thirty camps will be set up this summer in the Siskiyou and Cascade mountains of southern Oregon, and in the Sierra Nevada of California, to continue the fight against white pine blister rust. Under the leadership of the Federal Bureau of Entomology and Plant Quarantine, and in cooperation with the U. S. Forest Service, the Oregon and California Revested Lands Administration, the National Park Service, the states of California and Oregon, and private timber owners, these camps will be established in sugar pine stands of this region. Fifteen hundred men—about fifty at each camp—will be employed.

◆ ◆ ◆ BOOK NEWS ◆ ◆ ◆

PLEASANT VALLEY, by Louis Bromfield. Published by Harper & Brothers Publishers, New York and London. 300 pages, ill. Price $3.00.

Mr. Bromfield's idyll of the Ohio countryside is an account of his experiences as a practical farmer. Leaving France after Munich, he returned to his native Pleasant Valley, where, with several eroded hill farms to start with, he built "Malabar." Year by year he watched life return to the land, with greener fields, sleeker cattle, and heavier crops. He built a homestead of security and plenty by re-discovering the wealth, the beauty and the endless variety of an American farm.

The rural philosophy which he expounds is based on the one hand upon a profound respect for the soil; and upon the other, a conviction that the system of agriculture inherited from North Europe and the frontier is unsuitable and destructive, and needs revamping. His success in working toward a new system warrants careful reading by everyone who has the welfare of this country at heart.

Mr. Bromfield is a true "Friend of the Land," and his delightful book has our highest recommendation.

TRANSPLANTING OF TREES AND SHRUBS IN THE NORTHEASTERN AND NORTH CENTRAL UNITED STATES. Published by the National Shade Tree Conference, Office of the Secretary, Ohio State University, Columbus, Ohio. 76 pages, illustrated. Price thirty-five cents a copy.

This bulletin, prepared essentially for the use of the camouflage branch of the U. S. Army Engineers, gives very valuable—the latest—information available on how to handle and move large plant material, stressing the importance of such material in landscaping and as immediate protection in the camouflage of military posts, reservations and wartime industrial plants in the area under discussion.

WILD VIOLETS OF NORTH AMERICA, by Viola Brainerd Baird. Published by the University of California Press, Berkeley, Calif. 225 pages, illustrated. Price $10.00.

Through color plate and scientifically accurate but simply expressed text, this book brings to all violet lovers—and they are legion—a dependable means of identifying the different species. Widely distributed in Europe and growing in every state in the Union, the love of this flower is rooted in antiquity, for it was mentioned often by the Greek philosopher Theophrastus, who lived three hundred years before Christ. The author is the daughter of the late Ezra Brainerd, the authority in this field, who wrote the classic, *Violets of North America.* His close companion for many years, thoroughly grounded in her knowledge of the subject, her book completes his work. It is beautifully made, with eighty water-color illustrations painted by F. Schuyler Mathews.

INTIMATE GLIMPSES OF OLD ST. MARY'S, by George Morgan Knight, Jr. Published by the American Good Government Society, Washington, D. C. 127 pages, illustrated. Price $5.00.

St. Mary's County, called the "Mother of Maryland" because the State was born in the founding of St. Mary's City in 1634—is rich in tradition and history. Here are found famed historical landmarks, and scenery of beauty unexcelled in sheltered bays and rivers flowing quietly to the sea past green, productive fields and virgin forests. In this "cradle of freedom" much of the colonial atmosphere still lingers, for many of the old manor houses where the great men of the nation lived or foregathered, are still standing. To those who know it, St. Mary's is unique in all the world. To those who do not, this little book of "intimate glimpses" will introduce it in all its charm of fact and fascinating legend.

THE ROSEATE SPOONBILL, by Robert Porter Allen. Published by National Audubon Society, New York, N. Y. 142 pages, illustrated. Price $2.50.

This book, by the director of sanctuaries of the Audubon Society, is the result of twenty-five months of extensive study of the spoonbill, during which the author spent more than a year in its natural habitats in Florida and Texas. It is illustrated with both remarkably beautiful photographs and quaint drawings of the bird's droll poses.

HOW TO KNOW THE SPRING FLOWERS, by Mabel Jaques Cuthbert. Published by H. E. Jaques, Mt. Pleasant, Iowa. 168 pages. Price $1.50.

Scientifically reliable, this is another of those invaluable "Pictured-Key" books which lead the reader to a better understanding of nature in a very simple way. Perhaps too many people feel that knowledge of plants involves continued study and elaborate research, but this little volume leads the reader down the path to effective knowledge of plant life.

12,000,000 Acres

(*From page* 301)

Spanish papers. Just to say I'd s-seen 'em."

The kindly judge understood. "Why certainly, Tom. I can appreciate your interest in them. They are amusing, for a fact. You go in there to the table in my private office and I'll have the guard bring them out. The guard will have to sit with you, but you won't mind that."

"T-T-Thanks."

And so, for the next hour Tom Weedin rode his hobby. Thumbing old parchments and heavy yellowed papers, with holes where leather thongs had tied some in bindings abroad, with clamps on some, with all the evidences of age. Here, before him, were the most important papers in Arizona's history, Tom realized. What a break that he could actually get to handle them and read them! As with most border folk, he spoke enough Spanish to read them, and this was joy indeed.

And then— suddenly Tom Weedin stared at a page and grunted.

He blinked and read it again. Hurriedly he turned some more pages, looked back at several already passed. The more he looked the more excited he became. In another ten minutes he got up abruptly, stammered thanks to the guard and ran out of the room. The judge was on the street, but Tom Weedin ran and ran until he found him, and then was so excited he could barely talk.

"J-J-Judge, your Honor!" he half-whispered. "Them barony p-p-papers, they—they--"

"Yes, Tom? . . . Get hold of yourself."

"They—they—" Tom pulled the judge's head down and whispered into his ear, and through the excited stuttering came amazing news. The judge's chin dropped; his eyes went wide.

"Sh-h-h, don't say a word about this to anybody else, Tom. Why, that's an astounding thing! Wait till I can take action."

To be concluded.

FCA to Dispose of Surplus Lands

The Farm Credit Administration has been designated by Secretary of Agriculture Claude R. Wickard to dispose of such surplus agricultural and forest lands, no longer needed for war purposes, as are assigned to the Department of Agriculture by the Surplus Property Board.

"I have named the Farm Credit Administration for this important task," Secretary Wickard stated, "because it has the facilities and trained personnel qualified for this work."

Bruin

(*From page* 271)

thing. As my friends and I had laughed at the big black bear making a pass towards us that summer evening in a northern Michigan resort, just so does a majority of the general traveling public think of bears.

The Great Smoky Mountain National Park posts this warning, "The black bears which are so frequently observed along the mountain road are wild animals. . . . It is against the regulations of this National Park to feed or molest the bears . . . feeding causes bears to become overbold . . . this may lead to incidents whereby it may become necessary to destroy such animals. Help us preserve these fine wild creatures. . . ."

Naturalists in the parks also include in their lectures discussions of the bear problem and appeal to the public not to feed the animals. As a last resort, members of the public who persist in feeding the bears in a particularly flagrant careless manner are arrested, taken before the U. S. Commissioner and fined.

So don't blame bruin when he bites the hand that feeds him. Bears are sometimes erroneously considered vegetarians because of their fondness for berries, white clover, mushrooms and such diet. But they are actually carnivorous. In his wild natural state, nature intended the bear as a carrion eater. It is man who has taught him to be a parasite. To clown like an Olsen and Johnson in a Hellzapoppin outdoor show. To take what he wants regardless of the price. The price eventually will be a bounty on his head unless normal relationship can be restored. A price which will mean another unhappy chapter ending in the nation's poignant book on diminishing frontiers and wildlife.

Forest Exchange

(*From page* 260)

the treated forest? What plagues would erupt during this period? The answers to such questions can hardly be known in advance.

To attempt to maintain a forest under controlled conditions with a greatly reduced biota might prove a little like raising timber in a greenhouse. We should expect eventual costs of production to be greater than at first seemed likely.

In the specific case of the spruce budworm, the financial loss to timber owners should be partly offset by a number of factors. In the more accessible areas it might pay to make a separate operation of harvesting the balsam fir when it is mature, leaving the spruce until later. In more remote areas, the loss

might have to be taken. But if spruce budworm is a native insect and, as the author says, "there were destructive outbreaks before logging began," then like fire or windstorm, or any number of forest pests and diseases, this should have been part of a calculated risk taken by the timber owners when they acquired possession. Quite a different matter from chestnut blight or the gypsy moth, which are directly attributable to human folly and could not have been accurately predicted.

Losses from spruce budworm in remote areas, if regarded as a normal expense incurred under present methods of timber-raising and large-scale clear-cutting of more or less even-aged stands, should give incentive to practice other methods where feasible.

The one best way to control spruce budworm may not yet be apparent. DDT, whatever its appeal to chemists, aviators and engineers, should not be accorded an unqualified welcome by biologists or ecologists for indiscriminate use on our forests.—*Alexander Lincoln, Jr.*, Meredith, New Hampshire.

"Back-Forty" Bunyans

(*From page* 273)

On one area, ten percent of the volume was taken out four years ago to accelerate growth on remaining stands. The crowns have already closed over, and three minutes time with an ax would give an idea of the growth—which is great. Several owners at times have sold stumpage to "gyppo" operators for whatever they would give, and they know how that works now, and how unsatisfactorily it ends up for them. One owner told how he had received more for the first three loads of piling the association sold for him than he did for stumpage on the entire forty acres sold to a "gyppo."

This is good timber growing country, this Snohomish County. One farmer reported that on a stand of mixed spruce and hemlock sixty-two years old, which he had measured, the land was putting on 2200 board feet an acre a year. Another farmer was cutting windfalls for cordwood and producing one and a half cords a day at $10 a cord, plus hauling charge. And he seemed to have plenty of dead material on the ground before he would have to touch his green and growing timber, fast reaching sawlog size.

Gone for these forest owners are the days of haphazard marketing, hop-skip-and jump logging, poor fire protection, and trying to buck a game without sufficient knowledge of costs and selling prices. Today, under the competent direction of Manager Simms, they know they are getting the best possible market

price for their products—and they harvest the products which will bring them the best returns, whether it is fuelwood, pulpwood, piling, sawlogs, fence posts, telephone posts, or any of the variety of products they can take from a properly managed forest.

"Management pays dividends," these Snohomish farmers will tell you, "and we plan on doing an even better job of getting high and steady returns year-after-year from our lands."

It is significant to note that, among the most enthusiastic supporters of these seventeen "back-forty" Paul Bunyans are the operators of large sawmills and other woodworking firms in Snohomish County. The results have been so good that plans are now afoot among industrial leaders to bring more of the farmers into active tree farm membership. In other counties in the state, such leaders, impressed by the Snohomish cooperative achievements, are making plans for an early trial in their districts.

In Oregon, Extension Forester Dan D. Robinson is already at work organizing a tree farming program. He points out that there are approximately 3,500,000 acres of farm or ranch-owned woodlands in Oregon, representing about nineteen percent of the agricultural land and eleven percent of the forest land in the state. In 1943, more than 500,000,000 feet of forest products were sold from Oregon's farm woodlands and, unfortunately, little of this timber was harvested under management plans. It is doubtful, therefore, if Oregon farmers realized anywhere near an equitable income.

The coming of sound forestry to farm forests means, among other things, higher quality of products; better prices because of product standardization; more intelligent marketing to meet market requirements; and better land management, which will mean a steady return from woodlands, just as from cultivated acres.

Talk with Jasper Storm, L. K. Sims, or Mac C. James, president of the Snohomish County Farm Forest Cooperative, and you go away convinced that they have found something important. They have the enthusiasm of evangels, and probably as important as the monetary gain which has come their way with this new program is the satisfaction and happiness they have discovered. No longer is it necessary for them to clear land for three meals a day and shelter over their heads. They have learned how to make the second growth forests along Puget Sound work for them—and profitably.

The Second Mile Up is Forested

(*From page* 287)

The considerable volume of sawtimber and cordwood standing in national parks is reserved from commercial cutting. Its contributions to recreation and water supply are of recognized importance. On the national forests there stands a total of 27,938,043,000 board feet, of which fifty-six percent is Englemann spruce, twenty-one percent lodgepole, eight percent alpine fir, seven percent ponderosa pine, five percent Douglasfir, and the balance divided among five needled pines, white fir and Colorado blue spruce. This is material of sawtimber size, yet the Forest Service estimates that only about 19,000,000,000 feet can be called operable under present or foreseeable standards.

Of the state-owned sawtimber, estimated at 174,000,000 board feet, 108,000,000 feet is lodgepole pine, 36,000,000 feet Englemann spruce, and the balance evenly divided between alpine fir and white fir. Private owners have an estimated 662,000,000 board feet of Englemann spruce, 379,000,000 of lodgepole pine, 362,000,000 of ponderosa pine, 282,000,000 of Douglasfir, 142,000,000 feet of alpine fir, and 26,000,000 feet of white fir. A bare 4,000,000 feet of five needled pines completes the total estimated stand of 1,857,000,000 board feet, most of which is operable.

While privately owned forest land amounts to 4,500,000 acres, there is little or no forest land classified as such on the tax rolls of any county. Such land is listed for what it was intended in the first place. Ranchers own forests which are used for grazing and which are classified as range. The Colorado Fuel and Iron Company, one of the larger industrial owners, has much of its property listed as coal lands. Forested mining properties are listed as mining claims and are so assessed. In the case of coal lands and mining claims, this is in no sense tax evasion, since such lands are assessed higher than they would be as forests. Range lands are assessed somewhat lower.

Under constitutional mandate the legislature of Colorado placed upon the sheriff of each county responsibility for protecting forests from fire. Some sheriffs do a good job; some do not. It depends upon the man and upon the pressures which are brought to bear. Although several thousand acres of state and private lands are burned over each year, the situation is believed to be improving on the whole. Fire control in the national forests and national parks is carried on effectively by the federal

government. Incendiarism or deliberate burning is not common in Colorado, but campers, smokers and sheepherders are often careless here as elsewhere.

Burned-over lands within the thrifty forest belt generally restock well but slowly, with lodgepole pine tending to increase its acreage. Therefore, planting has been negligible, and it is questionable whether large scale planting could be economically justified. Attempts to plant the mountain parks have failed, probably because their heavy clay soils are less favorable for trees than the siliceous soils of the mountains. More important is the planting done as shelterbelts around prairie homesteads. Extension foresters are slowly arousing farmer interest in the establishment of such plantations.

In responding to the war effort, Colorado's wood-using industries increased their output wherever labor was available. Thirty-seven more sawmills were in operation in 1943 than in 1939, and lumber production has been stepped up by 6,000,000 board feet. Railroad ties have been an important product since early days. However, sawmilling has been hindered by local indifference towards woods work and by prejudice against home-grown lumber built up by past practices. Poorly sawn, poorly seasoned boards were the rule. Loss of markets naturally followed, until today eighty percent of Colorado's lumber is imported. A case has even been found of a local sawmill owner sending his products to Nebraska because the home markets preferred to buy from the West Coast. However, this firm built its business on excellent manufacture, proper seasoning and careful grading, thereby demonstrating that good lumber can be made here.

In studying future manufacturing possibilities, the State Planning Board has seen fit to rule out pulp mills for lack of water, since no economical way has been found to purify water after use in pulp or paper manufacture and so make it available for irrigation. There are better prospects for a substantial wooden package industry. Demand for boxes and crates for packing high-grade fruit is strong and steady, offering a market large enough to absorb all that can reasonably be produced. Herein lies a suggestion for those who would develop forest products industries — to aim at production of the many special items for which there is local need, and for which the local timber species are suitable.

AUTHORS and PHOTO CREDITS

OREN ARNOLD (*He Stole 12,000,000 Acres*), prolific writer of the old West, lives near Phoenix, Arizona. EUGENE F. HORN (*Forest Resources of South America*), Yale forester, has been a lumber operator and land pioneer in Brazil for the past quarter century. GRACE V. SHARRITT (*You Can't Blame Bruin*) free-lances, at present from California. ARTHUR PRIAULX (*"Backforty" Paul Bunyans*), veteran newspaper man, writes from Eugene, Oegon. ROY C. BRUNDAGE (*Our Remarkable Hoosier Hardwoods*), formerly on the faculty at Purdue, is regional consultant for the Central States, while J. LEE DEEN (*The Second Mile Up Is Forested*), formerly dean of forestry at Colorado State, is regional consultant for the Rocky Mountain Region of the Forest Appraisal of The American Forestry Association. MARJORIE L. BARBOUR (*School in the Swamp*)—"100% Louisianian"—taught journalism at the University and now does agricultural editing. ARTHUR H. CHRISTIE (*Wartime Forest Farmer*) New York State forester—is inspector of forest farming projects for the Forest Service, operating from Virginia to Maine.

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Purdue Agric. Expt. Station—page 281.
Soil Conservation Service—pages 273, 275, 276 and 277.
Wisconsin Conservation Department—page 292.

ATTENTION:

FORESTERS AND OTHER TECHNICIANS IN THE FIELD OF FORESTRY, RANGE MANAGEMENT, SOIL CONSERVATION, WILDLIFE, AND RECREATION

(To our other readers: Watch this page next month.)

Help us to improve AMERICAN FORESTS Magazine and to know our readers better by answering the following interesting questions. All responses, ideas, suggestions, become the property of The American Forestry Association. Please answer all questions fully. *First,* be sure you have gone through the magazine as you normally would have. Then answer clearly, and *fully*. Watch for next month's questionnaire!

IMPORTANT

A $25 War Bond will be awarded the person sending in the most complete and intelligent reply. To everyone replying will be sent a box of 50 of the Association's new FOREST FIRE PREVENTION Book Matches. To qualify your reply must be postmarked by July 31.

CUT HERE

1. (A) Check which of the following articles you have read — *thoroughly* (note as "T"); those which you have merely *scanned* (note as "S"); and those which you *did not read at all* (note as "N"). (B) Mark with an "X" in the column provided, the *three* articles which interested you most. There should be a "T", "S" or "N" for each article.

"X"	"TSN"		"X"	"TSN"		"X"	"TSN"	
( )	.....	My Favorite Tree 258	( )	.....	You Can't Blame Bruin 269	( )	.....	The Second Mile Up Is Forested 284
( )	.....	Forest Exchange 260	( )	.....	"Back-forty" Paul Bunyans 272	( )	.....	School In The Swamp . 288
( )	.....	Editorial 263	( )	.....	All-Wood Fighter Plane 274	( )	.....	Tree Series 290
( )	.....	He Stole 12,000,000 Acres 264	( )	.....	Silt Is A Saboteur 275	( )	.....	Big Trees 292
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Of all the articles you have ever read in AMERICAN FORESTS which one did you like:

Best? .....

Next Best? .....

2. Are present front covers satisfactory or could they be improved? Satisfactory.....; Be improved.....

(If not satisfactory, what improvement do you suggest?) .....

.....

How about the magazine's size and general makeup? Size is satisfactory "as is".....; (or) Size should be ....." x ....". Makeup suggestions.....

.....

Should the magazine be more technical or less?.....

More editorial material or more pictures—Which?.....

3. Would you like supplementary pamphlets amplifying specific subjects in detail (10c-25c)? Yes..... No.....

If yes, what subjects?.....

4. Is your subscription primarily for the magazine or for membership in The American Forestry Association?

Remarks .....

(OVER)

Wartime Forest-Farmer

(*From page* 294)

which the land was heavily burned.

Contacts with several local sawmills brought buyers to inspect and bid on Mr. Atwood's timber. A nearby sawmill was high bidder on the sawlogs while a mine jobber bought the mine prop stock. All material was sold on the skidways in the woods.

Before logging operations, Farmer Atwood, his foreman and the forester reviewed cutting plans in detail. They went over the woodlot and marked all trees to be cut. Locations of skidways and logging roads were determined while on the ground.

Following the cutting plans the woodlot was to be handled in three sections or units, all having different forest types and age groups. The first unit was forty-five to sixty acres of mature white pine-hemlock-hardwood, from twelve to thirty-two inches in diameter. The second was twenty to twenty-five acres of Scotch-white pine poles planted in 1910. Unit No. 3 was 100 to 150 acres of mixed white, red and pitch pine, from four to twelve inches in diameter. The remaining 200 acres was mixed hardwoods and some pine of all ages.

Initially, units 1 and 3 were marked for two-year operations. The sites with considerable hemlock were marked heavier than the others to take advantage of a good market for this ordinarily slow moving species; also to reduce the hemlock and increase the white pine. Actually, it meant cutting the hemlock to a fourteen-inch diameter limit, while the pine was cut on an individual tree basis, with an effort being made to hold it to a minimum limit of eighteen inches. As a whole, this unit produced a total of 127,000 board feet of white pine and hemlock. Since only nine and a half acres were cut, the average cut an acre was 13,370 board feet. A residual stand of 6,500 board feet an acre remains. For these 127,000 board feet Mr. Atwood received $17 a thousand in the woods. Of this, $5 a thousand went to three neighbor farmers for their choppin' This netted them $212 each for six weeks work. Leon Atwood's cash return for his logs was $160 an acre, less cost of farm labor.

In Unit No. 3 the marking was totally different. Here was a heavy mixture of white, red and pitch pine, so dense that growth was slowing down. The marking removed all pitch pine and enough of the red and white to open the crowns to stimulate growth. To show the choppers what was desired, all trees on an acre plot were individually marked—those to be cut with yellow paint, those to remain with white paint. The poles taken out from this unit were sold as mine shoring and props. A total of 10,000 board feet was cut. The props averaged fifty to the thousand board feet, and four to the tree, or a total of 500 props from two and a half acres. These were sold at the rate of $18 a thousand board feet. The same three neighbor farmers received $5 a thousand for this cutting, adding $16.67 each to their cash income. Mr. Atwood received $72 an acre for his mine props, less overhead of year-round help.

Unit No. 2 was marked for cutting this year. The plan called for the complete removal of every other row of the plantation and every other tree in the remaining rows.

Leon Atwood is not only doing his part in this war by producing as much food as possible from his farms, he is as well producing vitally-needed wood products by using his manpower throughout the year.

---

5. How many persons besides yourself read your copy of the magazine? #.....in family. #.....outside family.
   What do you do with your copy after reading? Pass it to others..... File it..... Discard it.....
6. What types of forest equipment, machinery, supplies, camping, outing, sports material do you purchase (or influence the purchase of)?.....
7. With which of the following fields of forestry and land management are you actively identified at present?
   Federal..... State..... Municipal..... Private Industry..... Other.....
   (If none—state interest in forestry or related fields).....

Name..... Address..... City..... State.....

Age.....yrs. Married or single..... Children under 12..... Children over 12..... Adults in Family.....

Income: "A" ($1000-$2500).....; "B" ($2600-$5000).....; "C" ($5000-$7500).....; Over $7500.....

Training..... Character of present work.....

Personal Hobby or Avocation..... Family Hobby or Avocation.....

If your personal income were increased 15%, what would you do with the increase?.....

Do you own your own home.....; automobile(s).....; horse.....; forest or woodland.....

Other property.....

Thank you. Se sure you answered all questions fully and then tear out bottom half of this page and return it to:

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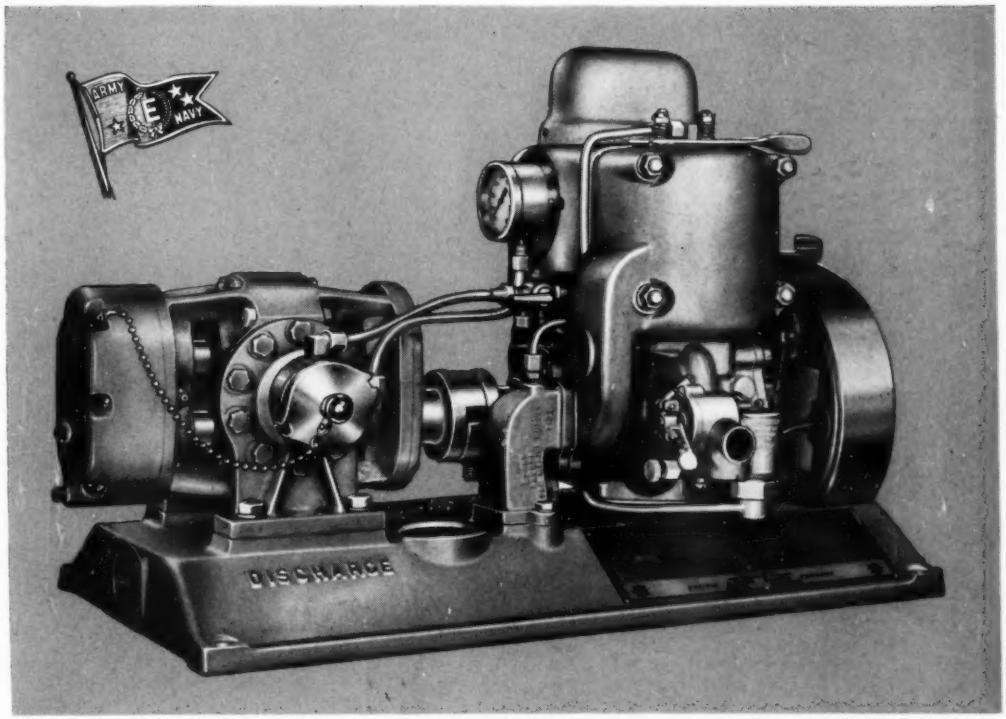

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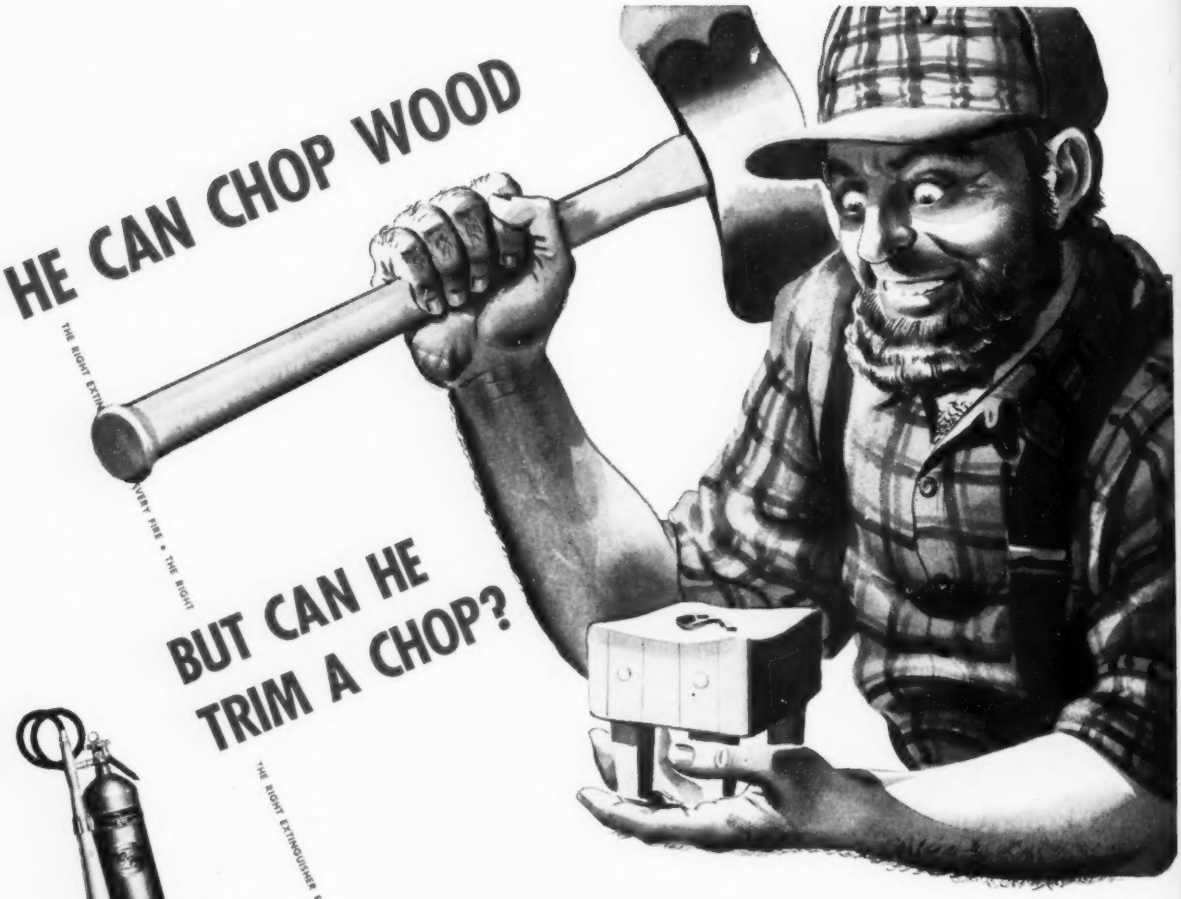

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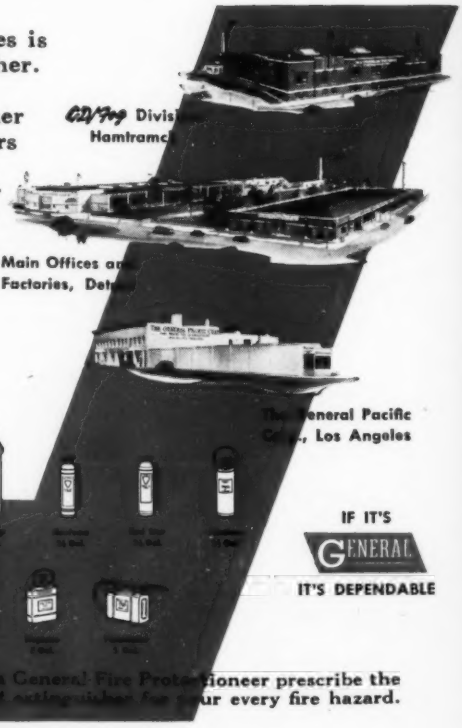

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